



ITF & TTF Manual

A-Series, M-Series & CSM/GEM

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Integrated electronics manufacturing solutions

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ITF & TTF Manual

A-Series, M-Series & CSM/GEM

- 1** **Option Manual Feeder Service Shop**
- 2** **Spare Parts Overview ITF/TTF**
- 3** **Option Manual ITF/TTF Analysis Tool**
- 4** **Option Manual ITF/TTF Calibration Tool**
- 5** **Option Manual Tape Loading Unit**
- 6** **Option Manual Feeder Storage Cart**
- 7** **Option Manual ITF2 Repair Tool**



Option Manual

Feeder Service Shop

Document	Option Manual Feeder Service Shop
Based on	
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Option Manual

Feeder Service Shop

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CHAPTER 1 Safety

For the correct and safe use of the Feeder Service Shop tools and the feeder repair and calibration activities both, operating and service personnel should follow generally accepted safety procedures. In addition, they must comply with the safety precautions as specified in this manual.

Where necessary, special warning and caution statements are used throughout this manual. These statements will be explained in this chapter.

Moreover, all warning and caution statements presented on any sticker on the Analysis and Calibration Tools are explained in this chapter.

1.1 Personnel Qualification

Operation, adjustment, maintenance and repair of the Feeder Service Shop, may only be carried out by personnel who are aware of the hazards involved.



NOTE: Assistance and training is available via ramp-up support.

1.2 Caution and Warning Statements

■ Manual:

ATTENTION:

To urge attention in order to prevent personal injuries or dangerous situations, further described within this frame.

CAUTION:

To urge attention in order to prevent damages to equipment, further described within this frame.

■ Software:

ERROR:

To urge attention in case of an invalid process/action or value, further described within this frame.

ATTENTION:

To urge attention in case of a deviant than standard process/action or value, further described within this frame.

1.3 Danger, warning and caution

■ Danger

Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

A danger statement is displayed in this manner:



<p>HAZARD IDENTIFICATION</p> <p>Hazard consequence.</p> <p>Hazard avoidance.</p>
--

■ Warning

Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

A warning statement is displayed in this manner:



<p>HAZARD IDENTIFICATION</p> <p>Hazard consequence.</p> <p>Hazard avoidance.</p>
--

■ Caution

Caution indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

A caution statement is displayed in this manner:



<p>HAZARD IDENTIFICATION</p> <p>Hazard consequence.</p> <p>Hazard avoidance.</p>
--

1.4 Safety Standards

The safety of the Feeder Service Shop is in accordance with the machine directive 89/392/EEC including amendments.

1.5 Liability

Assembléon shall not be liable for any costs, damages or personal injuries if the Feeder Service Shop is not used according to the safety rules given in this chapter.

CHAPTER 2 Service process, tools, parts and components

_TF-00002.fm

2.1 Introduction

This manual describes the entire service process for tape feeders. For some steps in the workflow (see 2.2) the analysis tool (PA: 2849/5x) or the calibration tool (PA: 2849/7x) is required, but other information in this manual, like visual inspection, cleaning and replacement instructions, is useful for feeder maintenance in general.

2.2 General service process

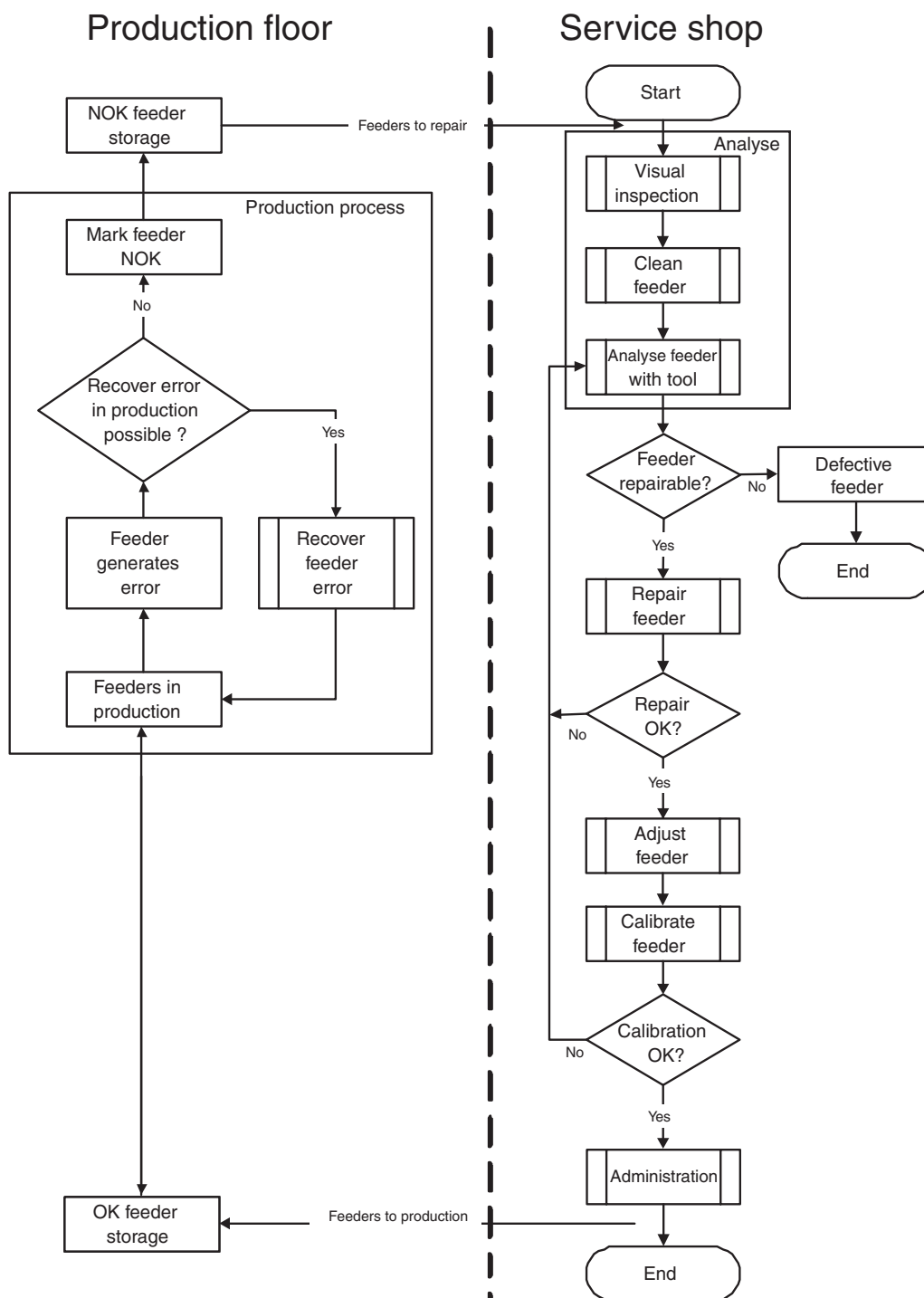


Figure 1 General service proces

_TF-00003.fm

2.3 Feeder service implementation

To fully benefit the service shop, a plan must be made on how to implement the service shop in the production process on the production floor.

The following has to be taken into account:

- What is a not OK feeder, e.g. life time, broken part, number of placements.
- When does a operator take the feeder out of the production line, e.g. number of occurred problems.
- Where to put the not OK feeders.
- How to get info on the feeder from the production floor to the service shop? E.g. label the feeder.

2.3.1 Example ITF label

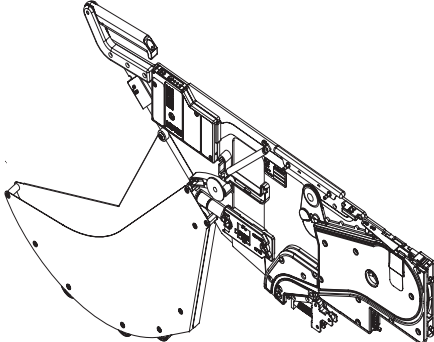
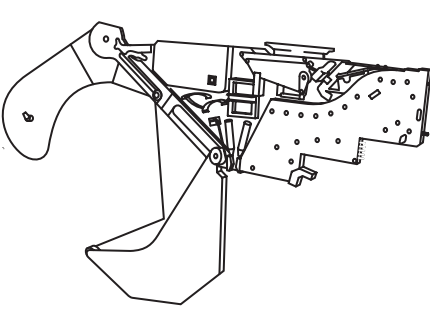
	<input type="checkbox"/> Pick problems <input type="checkbox"/> Index problems <input type="checkbox"/> Red LED indication <input type="checkbox"/> Peel off plate <input type="checkbox"/> Peel off unit <input type="checkbox"/> Reel holder <input type="checkbox"/> <input type="checkbox"/>
Name: Date: Machine ID: Production Line: Component ID:	

Figure 2

2.3.2 Example TTF label

	<input type="checkbox"/> Pick problems <input type="checkbox"/> Index problems <input type="checkbox"/> Red LED indication <input type="checkbox"/> Nozzle catch <input type="checkbox"/> Peel off unit <input type="checkbox"/> Reel holder <input type="checkbox"/> <input type="checkbox"/>
Name: Date: Machine ID: Production Line: Component ID: Lane:	

_TF-00004.fm

2.4 Product structure feeder service shop

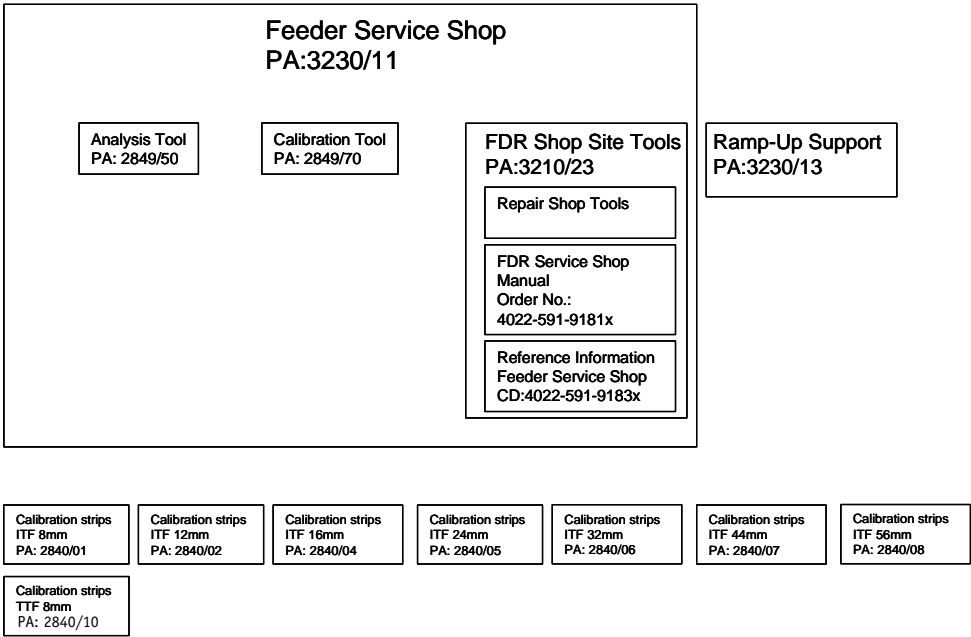


Figure 3

The feeder service shop consists of tools to repair ITF (R1, R2, R3 and R4) and TTF (R1.X) feeders locally with the same analysis and calibration equipment as Assembleon. With this complete shop you are able to repair 90% of your malfunctioning feeders. Damages of base plates and E-wiring flex foil placed on base plate cannot be repaired locally.

2.4.1 Check list feeder service shop



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Check List Feeder Service Shop



Check order completeness:



PA 3230/11 Feeder Service Shop



PA 2849/50 Analysis Tool



PA 2849/70 Calibration Tool



PA 3210/23 Feeder Shop Site Tools



PA 2840/XX Ordered Calibration Strips



Check contents of ordered PA no's

See Option Manual Feeder Service Shop Chapter 2



Check site preparations:



Workspace (table etc.)



Storage facilities (For parts, tools, etc.)



Electricity and air connections



Required locally obtained parts and chemicals (see table 2-1 in manual)



Pre-install tools

Store parts

(Optional) Ramp-up Feeder Service Shop:



Installation of tools



Explanation of Feeder Service Processes/possibilities



Execution/training of process:



Show feeder service and repair



Assist with feeder service and repair



Correct repair processes



Evaluation after 1-2 month

Signature Customer

Signature Assembléon

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_TF-00006.fm

2.5 Feeder service shop (PA 3230/11)

The feeder service shop consists mainly of:

- Analysis tool,
- Calibration tool
- Site tools.

2.5.1 Analysis tool PA 2849/50



The ITF-TTF analysis tool is a tool set existing of:
 Hardware: the ability of analysing automatically all electronic driven parameters of the feeders.
 Documentation: a checklist of all manually/visual items that cannot automatically be checked by the tool.
 The tool is located flat, so maintenance and repair can be performed on the tool itself. A "DUT" (Device Under Test) button can switch off the power to the feeder. The tool supports the TTF and the ITF2 family of feeders.
 The order number includes the analysis tool, repair documents, integrated current measurement, cabling, PC and software.

Figure 4 Analysis tool PA 2849/50

2.5.2 Calibration tool PA 2849/70



The ITF-TTF Calibration tool is a vertical positioned tool, equipped with 2 camera's, capable of calibrating the TTF and ITF2 family of feeders.
 The order number includes the calibration tool, cabling, PC and software.
 The order number does **not** include calibration strips. Sets of calibration strips can be ordered separately, depending on need.

Figure 5 Calibration tool PA 2849/70

2.5.3 Feeder shop site tools (PA 3210/23)

2.5.3.1 Repair shop tools

All tools (screw drivers, torque wrenches etc.) that are required for feeder repair (not listed as spare part). Chemicals and other parts have to be obtained locally.

• Required tools for repair

Repair shop tools	
Description	Qty
Tool box	1
Cross Screwdriver 00	1
Cross Screwdriver 0	1
Flat Screwdriver 00	1
Flat Screwdriver 0	1
Flat Screwdriver 1	1
Torx Screwdriver T10	1
Torx Screwdriver T8	1
Torx Screwdriver T6	1
Allen Screwdriver s1.5	1
Allen Screwdriver s2.0	1
Allen Screwdriver s2.5	1
Set allen keys	1
Open end wrench s6	1
Open end wrench s8	1
Set of punches	1
Torque wrench	1
Bit holder	1
Bit s1.5	5
Bit s2.0	5
Bit s2.5	5
Bit T6	5
Bit T8	5
Bit T10	5
Tweezers	1
Scissors	1
Diagonal cutter	1
Assembly plier	1
Hammer	1
Brush	1
Allen key s0.9	2
Feeler gauge	1

• Required chemicals and other parts (obtain locally)

Chemical and other parts (Obtain locally)	
Description	Service No.
Loctite 243	
Loctite 480	
Loctite 638	
Loctite 7400	
Loctite Cleaner	
Double sided tape	
Paper towel/cloth	
Isopropanol	
Extreme pressure lube #3	5322-390-20157
Zweirad fett	
Kluber Isoflex grease	5322-390-10151
Shrinkable Tube 9/3	
Shrinkable Tube 4,8mm NLT-K1022	
Shrinkable Tube 1,5	
Shrinkable Tube 3	
Paper strip 5x120mm	

Figure 6

2.5.3.2 Option Manual feeder service shop

This manual describes the complete process to repair a feeder.

2.5.3.3 CD-reference information feeder service shop

This CD-Rom is delivered with the manual in PDF-format and with all templates used in this manual. A start.pdf can be installed on the analysis and calibration tool's computer according to the read me file on the CD-Rom to access all files.

2.6 Calibration strips (PA 2840/xx)

Calibration strips are required to determine the Y-shift per sprocket wheel index. These strips are consumables and have a maximum guaranteed usage lifetime (see table). After damage, breaking, bending folding or any of these kind of faults a calibration strip must be replaced. Calibration strips are available in sets of 10 (8mm feeders) and 5 (all other feeders widths)

Order number	Description	Lifetime
PA2840/10	Calibration strip TTF (10 pcs)	100 calibrations for TTF release 1 (PA 2657/00), 50 calibrations for TTF release 1.1 (PA 2657/01) and newer
PA2840/01	Calibration strip ITF08 (10 pcs)	100 calibrations
PA2840/02	Calibration strip ITF12 (5 pcs)	100 calibrations
PA2840/04	Calibration strip ITF16 (5 pcs)	100 calibrations
PA2840/05	Calibration strip ITF24 (5 pcs)	100 calibrations
PA2840/06	Calibration strip ITF32 (5 pcs)	100 calibrations
PA2840/07	Calibration strip ITF44 (5 pcs)	100 calibrations
PA2840/08	Calibration strip ITF56 (5 pcs)	100 calibrations

Figure 7 Calibration strips

2.7 Ramp-up support (PA 3230/13)

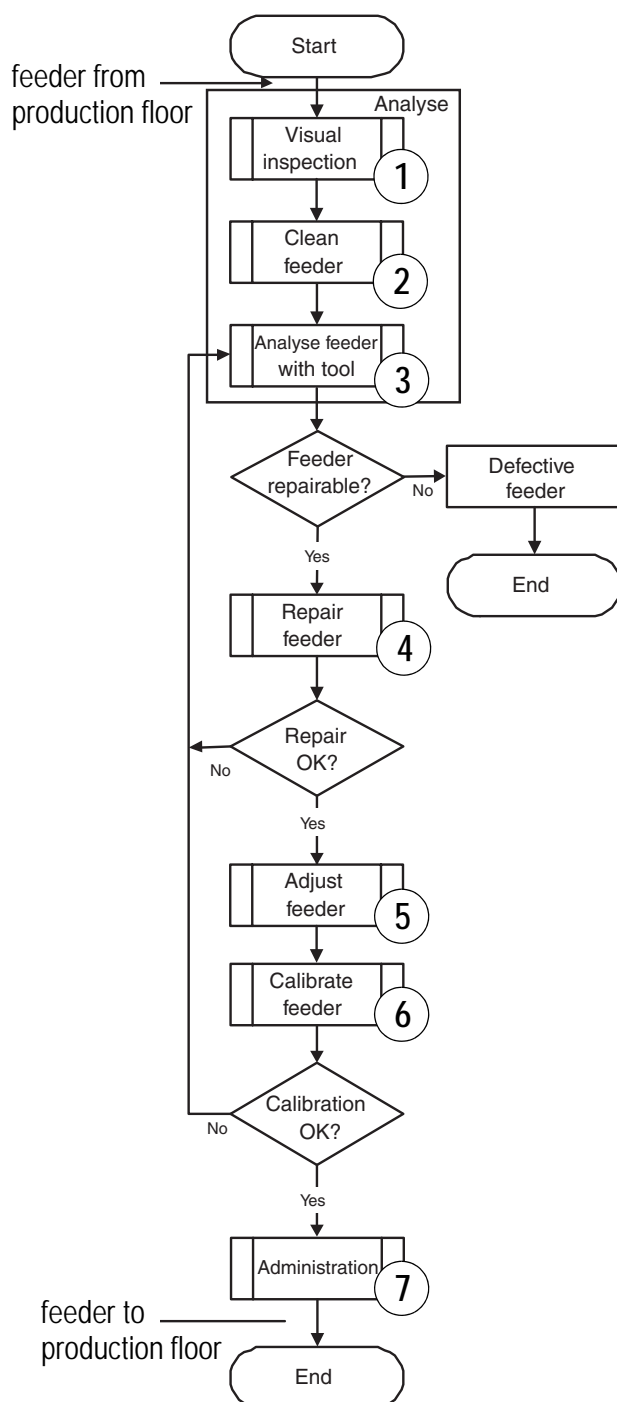
This is a 2-days on-site support to achieve a quick up and running feeder service shop for/at customer, containing:

- Installation of tools
- Explaining the feeder service process/possibilities
- Execution of process (show->assist->correct till repair engineer is 99.9% confident)
- After one month, a half day visit for evaluation.

The only requirement is floor-space with a table for tools and repair actions and capacity of local repair engineer that will be trained.

CHAPTER 3 Service ITF

3.1 General service process ITF



Reference:

1. [3.2 Visual inspection ITF](#)
2. [3.3 Cleaning instructions](#)
3. [3.4 Analysis ITF](#)
4. [3.5 Repair instruction](#)
5. [3.6 Adjustments and testing](#)
6. [3.7 Calibrating ITF](#)
7. [3.8 Administration ITF](#)

Figure 8 General service process

ITF-00009.fm

3.2 Visual inspection ITF

3.2.1 Quick reference sheet

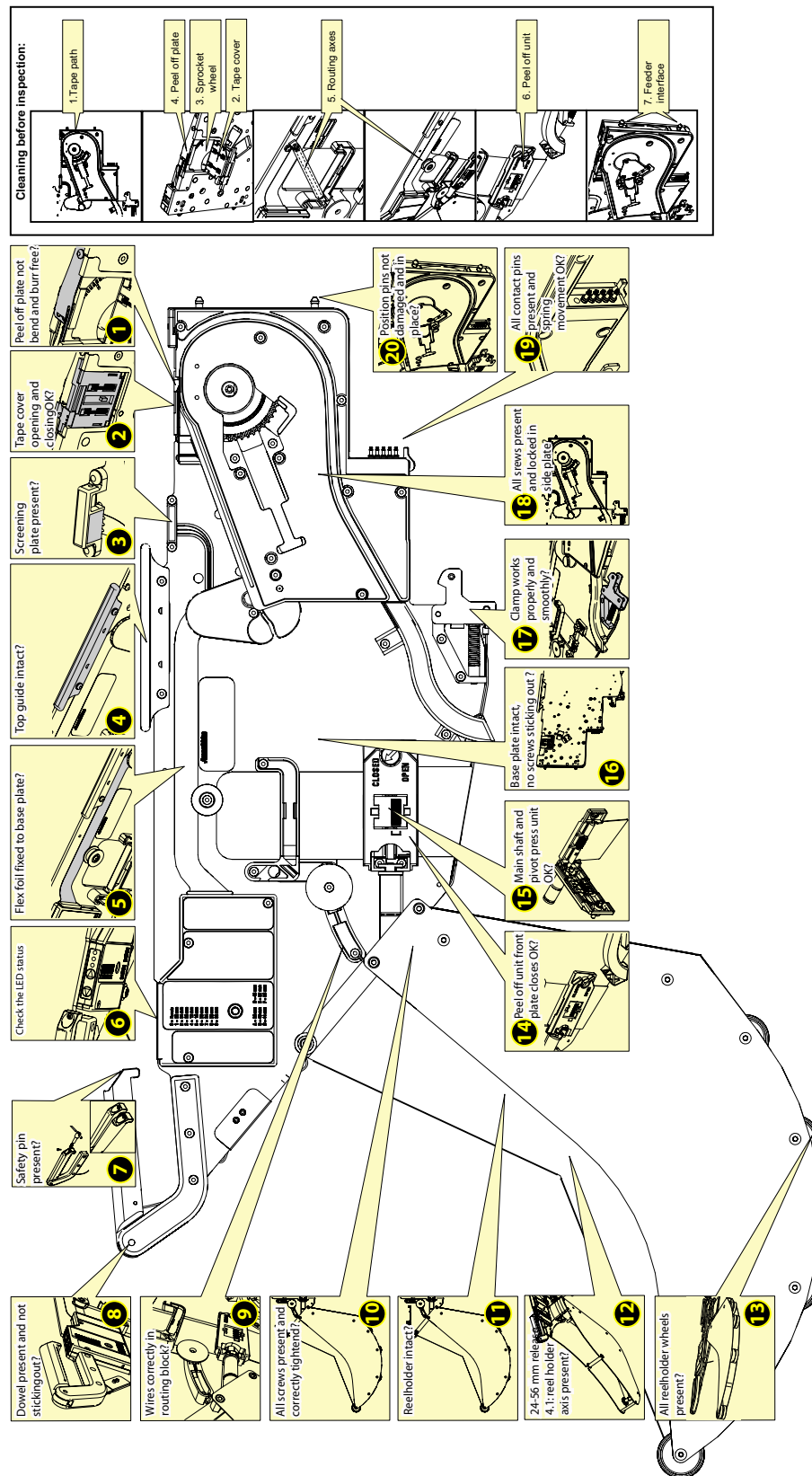
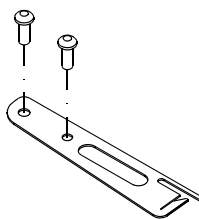






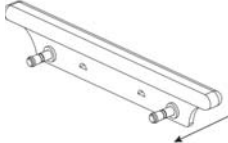
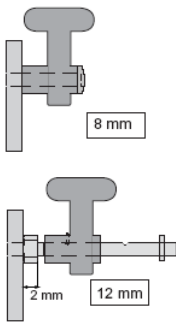


Figure 9



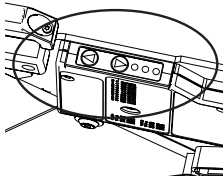
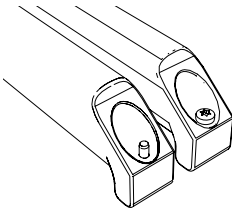





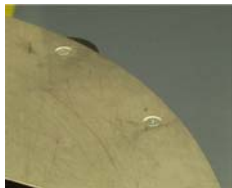
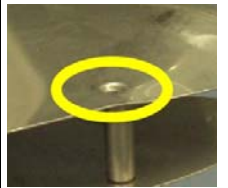


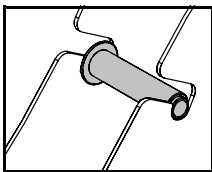
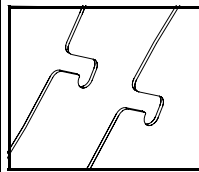
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- The 'Check numbers' correspond with the numbers in the quick reference sheet.
- Administrate **all** items that are not ok on a copy of the sheet in section [3.8 Administration ITF](#) (can be found on CD).
- If replacement is done directly, also administrate the replace action in the sheet in section [3.8 Administration ITF](#).


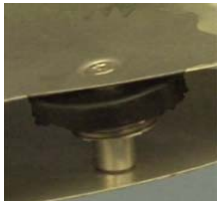





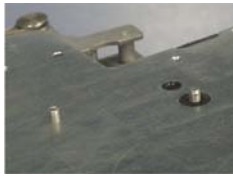





3.2.2 Visual inspection

Check no.	Part	Action	Check points	OK	Not OK	Instruction
1	Peel off plate	Check if the peel off plate is not bent and does not have burrs	<ul style="list-style-type: none"> •straightness plate •burr free on guiding surface 			3.5.12.4 Peel off plate, replacement
2	Tape cover	Open and close the tape cover	<ul style="list-style-type: none"> •The tape cover stays attached to the feeder. •Both springs are functioning. •No gap between nozzle catch and tape cover 		 	3.5.12.1 Tape cover, replacement
3	Screening plate	Check for presence	<ul style="list-style-type: none"> •The screening plate must be present under the receiving sensor 		 	3.5.12.3 Receiving sensor, replacement
4	Top guide	Move guide from left to right (ITF 12mm and larger)	<ul style="list-style-type: none"> •No broken or missing parts. •Movement possible and 'lock' OK. 	 		3.5.11.2 Top guide, replacement

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Check no.	Part	Action	Check points	OK	Not OK	Instruction
5	Flex foil	Check fixation	<ul style="list-style-type: none"> The flex foil must be completely attached to the base plate 			Attach foil
6	LEDs	Check LED status, see 3.2.3				
7	Safety pin	Check presence and height.	<ul style="list-style-type: none"> Height of safety pin is 2 ± 0.5 mm 			Place safety pin: 3.5.8 Clamping mechanism, replacement
8	Dowel	Check presence	<ul style="list-style-type: none"> Is the dowel placed correctly and not sticking out 			3.5.8 Clamping mechanism, replacement
9	Motor wires	Check correct routing	<ul style="list-style-type: none"> Routing of cables inside the black housing. 			Reroute the cables: 3.5.7.3 Peel off motor, replacement
10	Reel holder screws	Check for presence	<ul style="list-style-type: none"> All screws must be present and completely inserted 			Place screws: 3.5.6 Reel holder assembly, replacement
11	Reel holder	Check for bending	<ul style="list-style-type: none"> The reel holder has no bendings. 			Replace reel holder: 3.5.6 Reel holder assembly, replacement
12	Reel holder axis	Check for presence	<ul style="list-style-type: none"> Reel holder axis must be present 			Place or replace reel holder axis

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Check no.	Part	Action	Check points	OK	Not OK	Instruction
13	Reel holder wheels	Check for presence	<ul style="list-style-type: none"> •All wheels present. •All wheels can rotate 			Place or replace wheels.
14	Peel off unit front plate	Check closing mechanism and bending	<ul style="list-style-type: none"> •Spring in closing mechanism. •Cover closes? •Cover not bend 			3.5.7.6 Front plate peel off unit, replacement
15	Peel off unit main shaft and pivot press unit	Check for wear, and damages	<ul style="list-style-type: none"> •Main shaft not bent. •Main shaft not worn •Press unit freely movable and not worn 			Replace main shaft and pivot press unit: § 3.5.7.1 Pivot press unit, replacement 3.5.7.2 Main shaft (pinion), replacement
16	Base plate	Check for bending	<ul style="list-style-type: none"> •Base plate without bendings. •No screws sticking out 			Replace screws by correct screws
17	Clamping mechanism	Check proper and smoothly working	<ul style="list-style-type: none"> •Check clamping unit •Check cable routing 			3.5.8 Clamping mechanism, replacement
18	Side plate	Check screws and damage	<ul style="list-style-type: none"> •All screws present and locked in side plate •No damages? 			Place screws or replace side plate: 3.5.13 Side plate, replacement
19	Contact pins	Check presence and spring movement	<ul style="list-style-type: none"> •All 5 present •No damages •Spring movement OK for each pin? 			Replace contact pins: 3.5.10.1 Contact pins, replacement

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Check no.	Part	Action	Check points	OK	Not OK	Instruction
20	Position pins	Check for damage or mis-positioning	<ul style="list-style-type: none"> • Pins damaged • Pins in correct position 			Replace / adjust positioning pin: § 3.5.13.4 Position units, replacement

Figure 10 Instructions visual inspection ITF2

3.2.3 LED signals on ITF and TTF

The LED signals are useful for operators and for technicians.

The LED signals are generally the same for ITF and TTF.

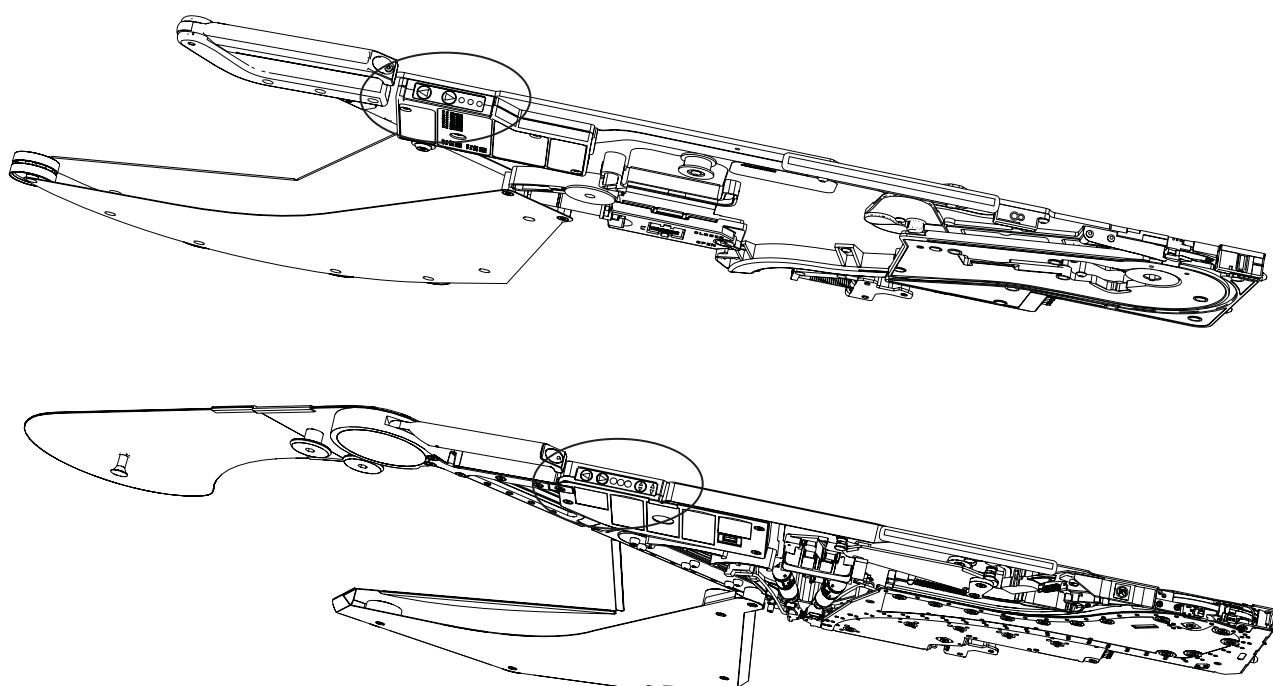


Figure 11 LEDs on ITF (above) and TTF (below)

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What is the problem?	When does it occur	How to resolve
Communication error	***** Red LED blinking 7 times.	
Message in box of the feeder is full. Short circuit between pin 2 (CAN Low) and 3 (CAN High). The feeder has sent a message to the trolley controller board, but has not received an acknowledge message back.	Only in combination with SVS-pro. SVS-pro tries to write in the feeder, but the feeder in box is full.	<ul style="list-style-type: none"> Remove feeder from machine. Check trolley controller board. Check contact pins from feeder. Check flat cable. Check controller board.
Memory corrupt	***** Red LED blinking 5 times	
The feeder memory is corrupt.	Only in combination with SVS-pro During tape loading. When operator doesn't wait for the beep of the scanner before releasing the feeder. While SVS-pro is writing to the feeder, the feeder was disconnected from the loading unit.	<ul style="list-style-type: none"> Use the analysis tool (if available) to reset the feeder. If the analysis tool is not available, send the feeder to the feeder repair shop.
Index time-out error	**** Red LED blinking 4 times.	
Next index position is not reached within a specified time.	Tape stuck or blocked Dirty sprocket wheel or sensor Defective sprocket sensor	<ul style="list-style-type: none"> Press forward or backward button Check tape path for obstructions Clean sprocket wheel Check functionality sprocket sensor, using the analysis tool (if available)
Nozzle sensor error	** Red LED blinking 2 times.	
Too much light received by nozzle sensor receiver. A nozzle is detected directly after the feeder is powered up.	External light source interference. Nozzle sensor not functioning well. Top foil blocks the nozzle sensor during power up.	<ul style="list-style-type: none"> Remove external light source (if possible). Clean nozzle sensors. Re-adjust nozzle sensor (ITF-2 only).
Peel off problem	* Red LED blinking 1 time	
Peel off problem Top foil buffer problem	Top foil broken Top foil not guided through peel off unit	<ul style="list-style-type: none"> Re-load top foil. Check peel off unit. Check buffer (incl. sensor).
Transporting top foil backward problem	● Red LED is constantly on	
Not ready to transport the top foil backward.	Pushing the backward button while the buffer-full sensor is not activated	<ul style="list-style-type: none"> Check peel off unit and replace if necessary. Check buffer and take necessary actions.
Low stock warning	☀ Yellow LED is blinking	
Stock is low. Stock level is entered while loading a new reel with use of SVS-pro.	Only in combination with SVS-pro. When the stock level has reached a pre-defined 'stock low' level.	<ul style="list-style-type: none"> Load new reel using SVS-pro. Place the feeder on SVS-pro loading unit and select the 'empty feeder' button on SVS-pro.
Zero stock error	● Yellow LED is constantly on	
Stock is zero (no components left on feeder).	Only in combination with SVS-pro. When stock level is zero.	<ul style="list-style-type: none"> Load new reel via SVS-pro. Place the feeder on SVS-pro loading unit and select the 'empty feeder' button on SVS-pro.
Feeder is OK	✱ Green LED is blinking	
Feeder is OK.	Feeder is set to "Remote ON" mode. Feeder is not initialized by SVS-pro.	<ul style="list-style-type: none">
Feeder is OK	● Green LED is constantly on	
Feeder is OK.		<ul style="list-style-type: none">

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3.3 Cleaning instructions

Estimated time to complete [min.]:

Required special tools.

Required part(s)



SENSITIVE EQUIPMENT
Wrong handling can cause damage.
Handle with care.



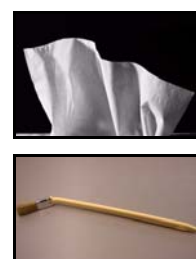
IRRITATING SUBSTANCE
Direct contact may cause irritation of the skin.
Avoid direct contact. Use Personal Protection Equipment.



NOTE: Source isopropanol locally and apply to local safety regulations

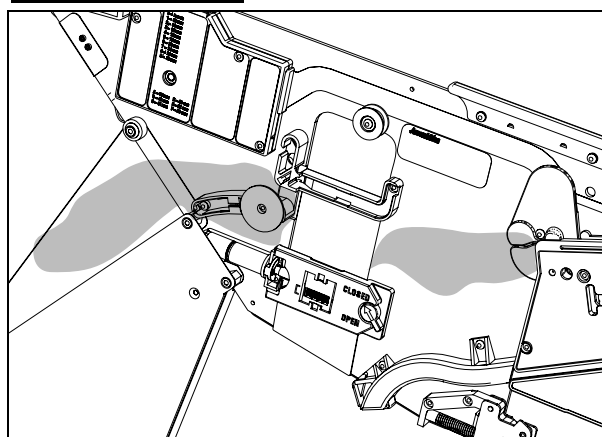
1. Required equipment

- Vacuum cleaner
- Isopropanol (reagent grade alcohol)
- Fibre free tissue
- Hard brush
- A pair of scissors
- Pair of tweezers



2. Tape path, cleaning

- Tool used: vacuum cleaner and/or hard brush.
- Clean the tape path.

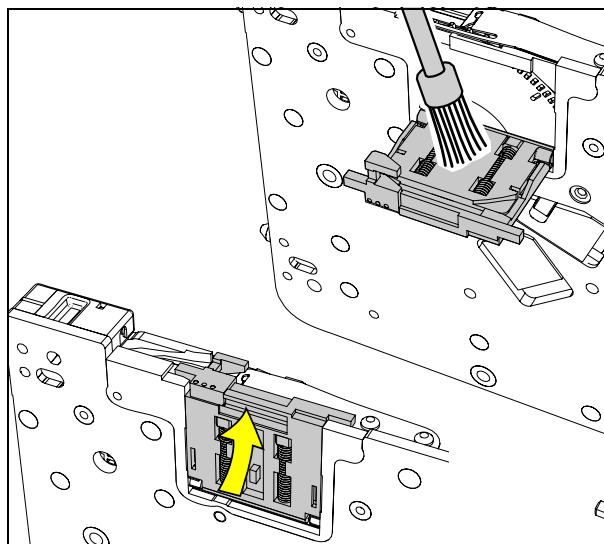


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3. Tape cover, cleaning

Note: Don't lift the tape cover at the metal part (8mm).

- Unlock the tape cover from its locking position.
- Clean the tape cover.
- Use vacuum cleaner and/or hard brush.

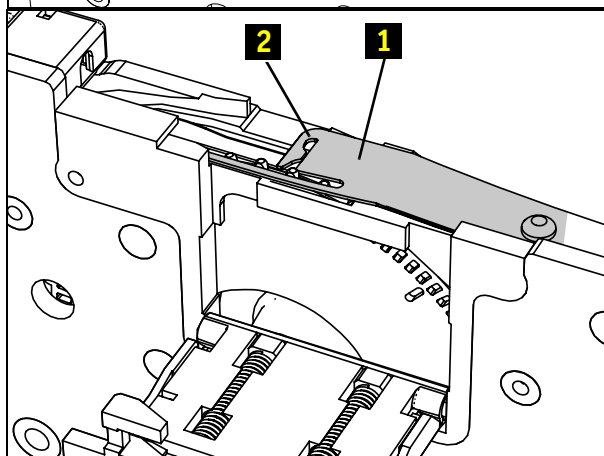


4. Peel off plate, cleaning

Note: Don't bend the peel off plate!

Note: Source isopropanol locally and apply to local safety regulations.

- Use fiber free tissue moistened with a small amount of isopropanol to:
- Clean the front (1) of the peel-off plate.
- Check and clean the slit (2).

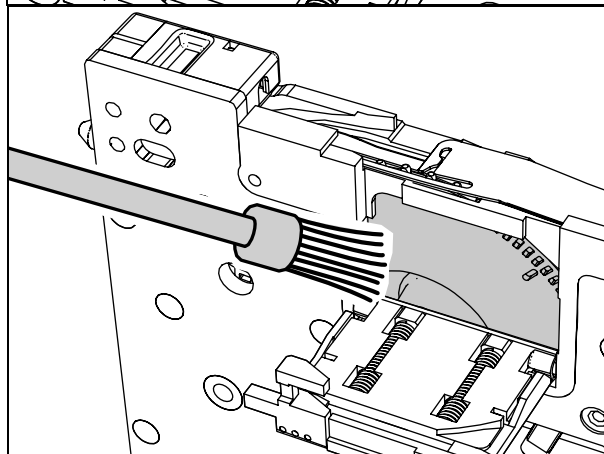


5. Sprocket wheel, cleaning

- Place feeder in loading unit.
- Remove any tape from the feeder.
- Lift and flip-over the tape cover.
- Clean the teeth and holes of the sprocket wheel.
- Use a vacuum cleaner and/or hard brush.

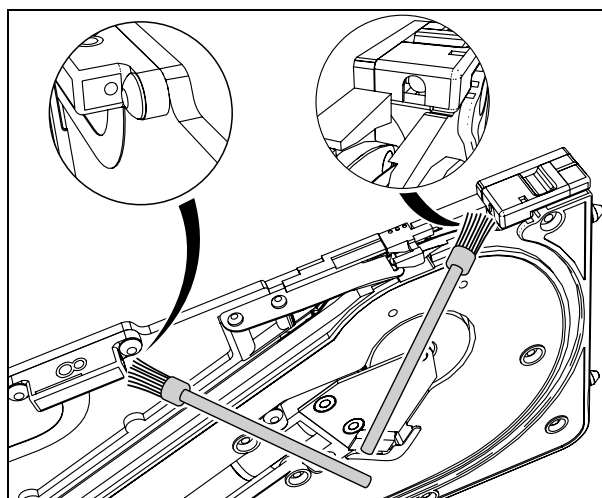
Note: Do not use compressed air. This will only blow the dirt into the feeder and will end up on other places like, for instance, the sprocket sensor.

- Press the index button and rotate at least one full round of the sprocket wheel while vacuum cleaning the sprocket holes.
- Check if no components are stuck in sprocket wheel holes.



6. Index sensor, cleaning

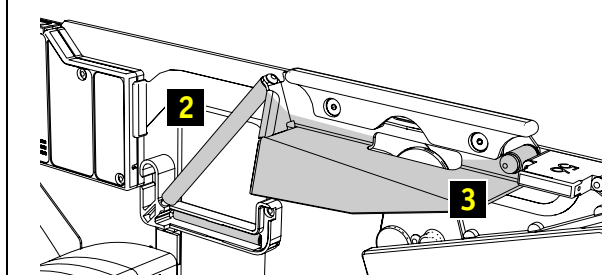
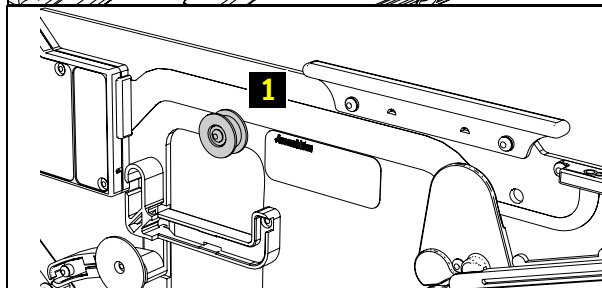
- Clean the index sensor with a soft brush to remove dust and hair.



7. Top foil routing, cleaning

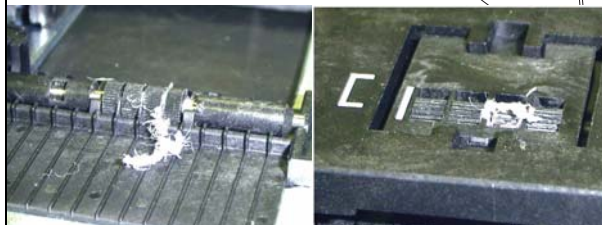
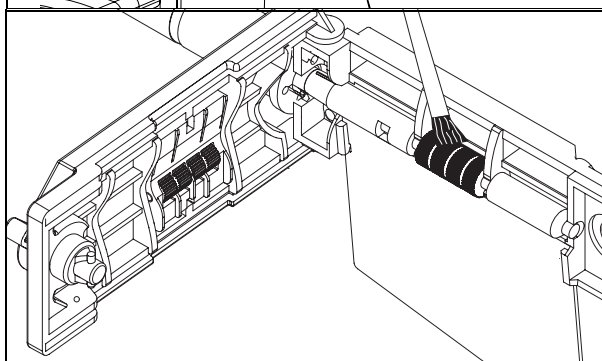
Note: Source isopropanol locally and apply to local safety regulations.

- Clean the parts with fiber free tissue moistened with isopropanol.
- Feeder 8 mm: clean roller (1).
- Feeders 12 - 56 mm (and older 8 mm): Clean sleeves (2).
- Feeders 44 - 56 mm: Clean guide with guide pin (3).



8. Peel off unit, cleaning

- Unlock the peel-off assembly from its locking position and clean both pinions. Turn the motor pinion in the direction of the arrow?.
- Use a vacuum cleaner, hard brush and a pair of tweezers.



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9. PSA tape used

- Remove glue.

3.4 Analysis ITF

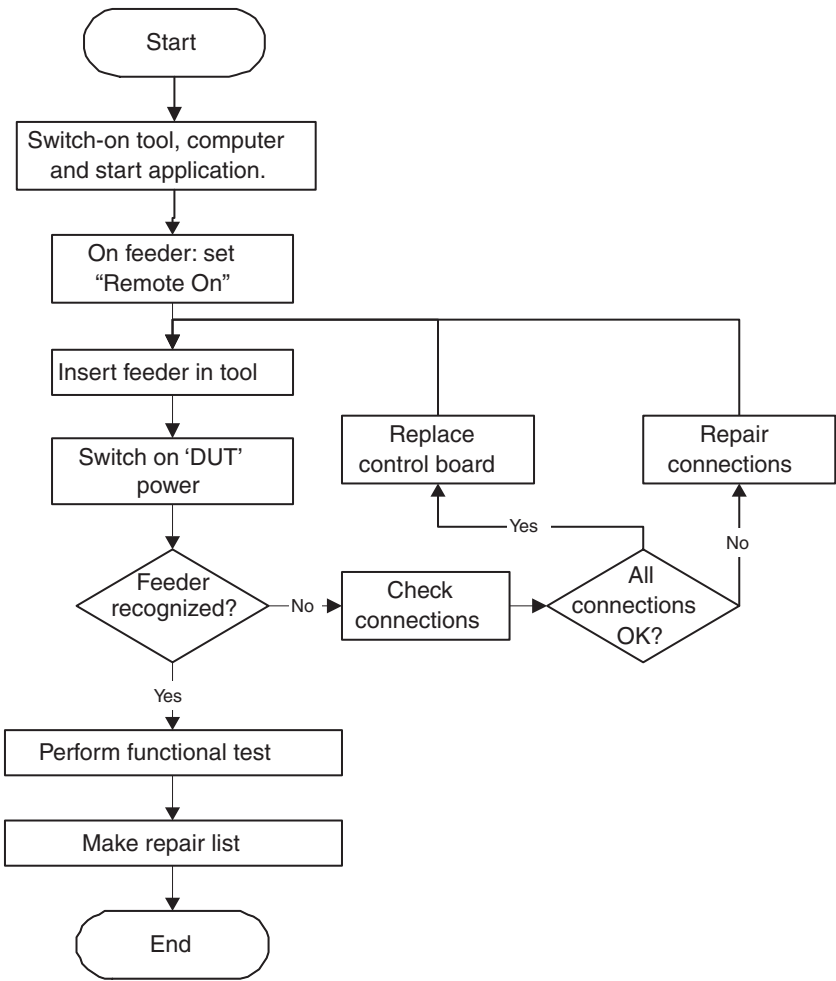
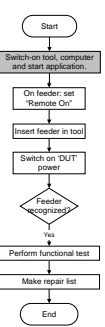
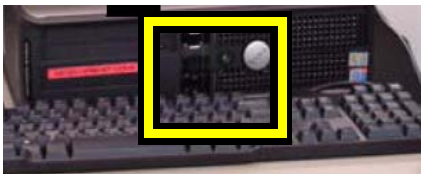
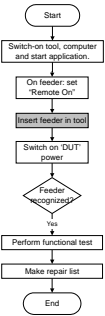
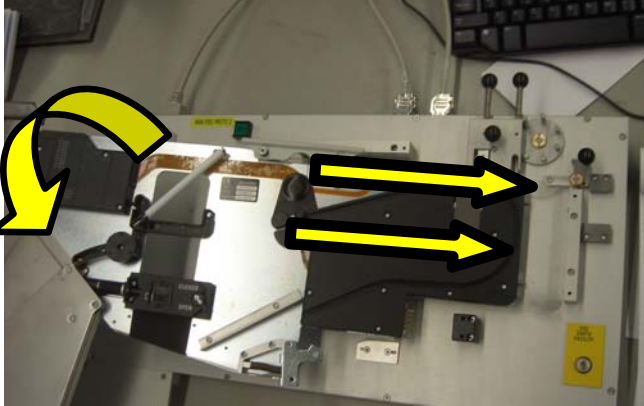
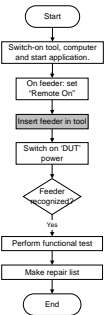
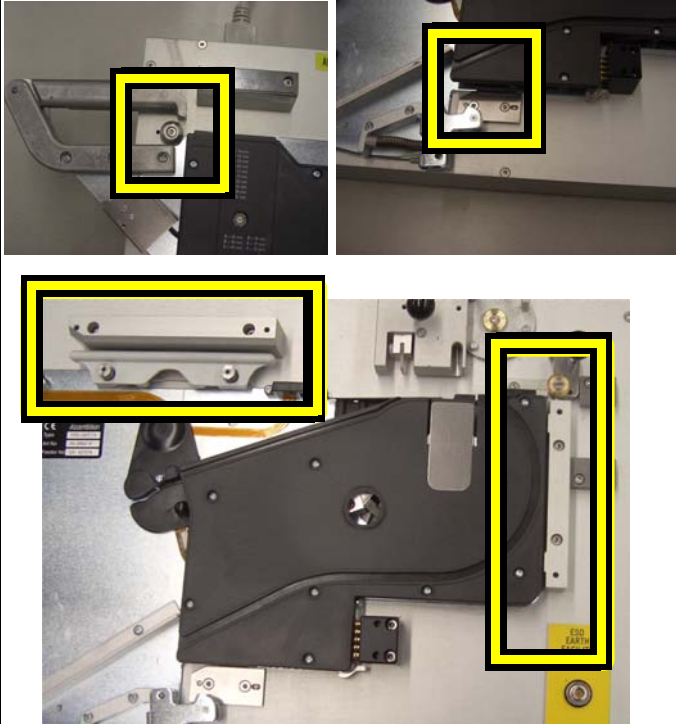
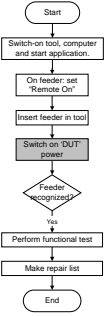



Figure 12 Work flow

	<ul style="list-style-type: none">•Switch on the computer	
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	<ul style="list-style-type: none"> •Start up the program with the icon 'ITF-TTF Analysis tool' 	
	<ul style="list-style-type: none"> •Switch on the 'Mains switch' on the tool 	
	<ul style="list-style-type: none"> •Make sure the 'DUT Power' of the tool is switched off. The switch is NOT illuminated. 	
	<ul style="list-style-type: none"> •Set the switch to "0" on the ITF •Write the serial number of the ITF down on the administration sheet 	

 <pre>graph TD; Start([Start]) --> Switch[Switch-on tool, computer and start application.]; Switch --> OnFeeder[On feeder: set 'Remote On']; OnFeeder --> Insert[Insert feeder in tool]; Insert --> SwitchDUT[Switch on 'DUT' power]; SwitchDUT --> FeederRecognized{Feeder recognized?}; FeederRecognized -- yes --> PerformTest[Perform functional test]; PerformTest --> MakeRepair[Make repair list]; MakeRepair --> End([End]);</pre>	<ul style="list-style-type: none">•Place the ITF to be analysed in the 'tool-table'	
 <pre>graph TD; Start([Start]) --> Switch[Switch-on tool, computer and start application.]; Switch --> OnFeeder[On feeder: set 'Remote On']; OnFeeder --> Insert[Insert feeder in tool]; Insert --> SwitchDUT[Switch on 'DUT' power]; SwitchDUT --> FeederRecognized{Feeder recognized?}; FeederRecognized -- yes --> PerformTest[Perform functional test]; PerformTest --> MakeRepair[Make repair list]; MakeRepair --> End([End]);</pre>	<ul style="list-style-type: none">•Check if the feeder is placed correctly	
 <pre>graph TD; Start([Start]) --> Switch[Switch-on tool, computer and start application.]; Switch --> OnFeeder[On feeder: set 'Remote On']; OnFeeder --> Insert[Insert feeder in tool]; Insert --> SwitchDUT[Switch on 'DUT' power]; SwitchDUT --> FeederRecognized{Feeder recognized?}; FeederRecognized -- yes --> PerformTest[Perform functional test]; PerformTest --> MakeRepair[Make repair list]; MakeRepair --> End([End]);</pre>	<ul style="list-style-type: none">•Switch on the 'DUT-power' of the tool. The switch becomes illuminated.	

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<pre>graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Remote[On feeder: set 'Remote On'] Remote --> Insert[Insert feeder in tool] Insert --> Power[Switch on 'DUT' power] Power --> Recognized{Feeder recognized?} Recognized -- Yes --> Test[Perform functional test] Test --> Repair[Make repair list] Repair --> End([End])</pre>	<ul style="list-style-type: none">•Check if feeder 'Type' and 'Number' appears. If not, look in the table in 3.5.1 what action to take.	<p>Identification</p> <p>Feeder type: ITF-4mm</p> <p>Serial number: 427378</p> <p>Software version: 1.7</p> <p>Lane 1</p> <table><thead><tr><th>Id</th><th>Module</th><th>Action</th><th>Unit</th><th>Expected result</th><th>Status</th></tr></thead><tbody><tr><td>1</td><td>Control board</td><td>EEPROM parameters</td><td></td><td>Set to default</td><td>Not done</td></tr><tr><td>2</td><td>Power supply</td><td>Power supply current</td><td>mA</td><td>60-80</td><td>Not done</td></tr><tr><td>3</td><td></td><td>Motor current forward</td><td>mA</td><td>5-75</td><td>Not done</td></tr><tr><td>4</td><td></td><td>Motor current backward</td><td>mA</td><td>5-75</td><td>Not done</td></tr><tr><td>5</td><td></td><td>Find reference position</td><td></td><td>Reference position found</td><td>Not done</td></tr><tr><td>6</td><td></td><td>Advance to position 23</td><td></td><td>Position = 23</td><td>Not done</td></tr><tr><td>7</td><td></td><td>Find reference position</td><td></td><td>Reference position found</td><td>Not done</td></tr><tr><td>8</td><td></td><td>Move to position 50</td><td></td><td>Position = 50</td><td>Not done</td></tr><tr><td>9</td><td></td><td>Current forward (open)</td><td>mA</td><td>15-50</td><td>Not done</td></tr><tr><td>10</td><td></td><td>Current backward (open)</td><td>mA</td><td>15-50</td><td>Not done</td></tr><tr><td>11</td><td></td><td>Current delta (open)</td><td>mA</td><td>0-10</td><td>Not done</td></tr><tr><td>12</td><td></td><td>Current forward (closed)</td><td>mA</td><td>15-80</td><td>Not done</td></tr><tr><td>13</td><td></td><td>Current backward (closed)</td><td>mA</td><td>15-80</td><td>Not done</td></tr><tr><td>14</td><td>Nozzle detection</td><td>Simulate pick action</td><td></td><td>Nozzle detected</td><td>Not done</td></tr><tr><td>15</td><td>Configuration switches</td><td>Rotary switch</td><td></td><td>All positions detected</td><td>Not done</td></tr><tr><td>16</td><td></td><td>Internal wiring</td><td></td><td>Select follows busy</td><td>Not done</td></tr><tr><td>17</td><td>Select/busy line</td><td>External connection</td><td></td><td>Select line detected</td><td>Not done</td></tr><tr><td>18</td><td>LEDs</td><td></td><td></td><td>Acting as walking light</td><td>Not done</td></tr><tr><td>19</td><td>Human interface</td><td>Forward button</td><td></td><td>Button detected</td><td>Not done</td></tr><tr><td>20</td><td></td><td>Backward button</td><td></td><td>Button detected</td><td>Not done</td></tr></tbody></table> <p>Start</p> <p>Test Selection</p> <p>None</p> <p>Accept</p> <p>Reset</p>	Id	Module	Action	Unit	Expected result	Status	1	Control board	EEPROM parameters		Set to default	Not done	2	Power supply	Power supply current	mA	60-80	Not done	3		Motor current forward	mA	5-75	Not done	4		Motor current backward	mA	5-75	Not done	5		Find reference position		Reference position found	Not done	6		Advance to position 23		Position = 23	Not done	7		Find reference position		Reference position found	Not done	8		Move to position 50		Position = 50	Not done	9		Current forward (open)	mA	15-50	Not done	10		Current backward (open)	mA	15-50	Not done	11		Current delta (open)	mA	0-10	Not done	12		Current forward (closed)	mA	15-80	Not done	13		Current backward (closed)	mA	15-80	Not done	14	Nozzle detection	Simulate pick action		Nozzle detected	Not done	15	Configuration switches	Rotary switch		All positions detected	Not done	16		Internal wiring		Select follows busy	Not done	17	Select/busy line	External connection		Select line detected	Not done	18	LEDs			Acting as walking light	Not done	19	Human interface	Forward button		Button detected	Not done	20		Backward button		Button detected	Not done
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10		Current backward (open)	mA	15-50	Not done																																																																																																																											
11		Current delta (open)	mA	0-10	Not done																																																																																																																											
12		Current forward (closed)	mA	15-80	Not done																																																																																																																											
13		Current backward (closed)	mA	15-80	Not done																																																																																																																											
14	Nozzle detection	Simulate pick action		Nozzle detected	Not done																																																																																																																											
15	Configuration switches	Rotary switch		All positions detected	Not done																																																																																																																											
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17	Select/busy line	External connection		Select line detected	Not done																																																																																																																											
18	LEDs			Acting as walking light	Not done																																																																																																																											
19	Human interface	Forward button		Button detected	Not done																																																																																																																											
20		Backward button		Button detected	Not done																																																																																																																											
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	<ul style="list-style-type: none">•Perform action	
	<ul style="list-style-type: none">•Select 'OK'	
	<ul style="list-style-type: none">•Follow tests on screen	

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Start

Switch-on tool, computer and start application.

On feeder: set 'Remote On'

Insert feeder in tool

Switch on 'DUT' power

Feeder recognized?

Perform functional test

Make repair list

End

•Test 'Waiting' for action

Position 23		Position = 23	<input checked="" type="checkbox"/>	Ok
Position		Reference position found	<input checked="" type="checkbox"/>	Ok
Position 50		Position = 50	<input checked="" type="checkbox"/>	Ok
d (open)	mA	15-50	<input checked="" type="checkbox"/>	30
d (open)	mA	15-50	<input checked="" type="checkbox"/>	30
a (open)	mA	0-10	<input checked="" type="checkbox"/>	0
(closed)	mA	15-80	<input checked="" type="checkbox"/>	50
(closed)	mA			
ok action		Nozzle detected	<input checked="" type="checkbox"/>	Waiting
ry switch		Select follows busy	<input checked="" type="checkbox"/>	Not done
al wiring		Select line detected	<input checked="" type="checkbox"/>	Not done
nnexion		Acting as walking light	<input checked="" type="checkbox"/>	Not done
LEDs		Button detected	<input checked="" type="checkbox"/>	Not done
d button		Button detected	<input checked="" type="checkbox"/>	Not done
d button		Button detected	<input checked="" type="checkbox"/>	Not done

Start

Switch-on tool, computer and start application.

On feeder: set 'Remote On'

Insert feeder in tool

Switch on 'DUT' power

Feeder recognized?

Perform functional test

Make repair list

End

•Set 'Pivot' on correct tape width position

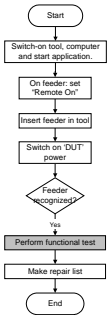
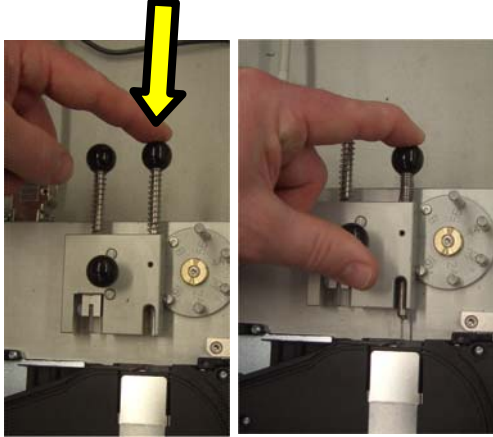

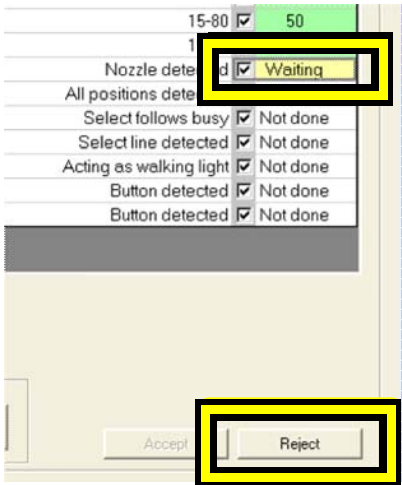
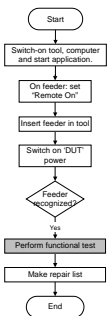
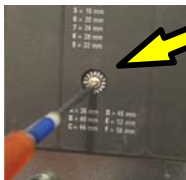


The photograph shows a close-up of a mechanical assembly, likely a feeder. A hand is visible on the left, holding a black knob. Yellow arrows point to various parts: one points to the black knob, another points to a circular component, and a third points to a rectangular component. A yellow box highlights a small rectangular component on the right side of the assembly.

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4022 591 91813
07.03 10-Oct-2007

Option Manual
Feeder Service Shop

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	<ul style="list-style-type: none"> •Push 'Needle' down •Look if the test is ok •If the test is not ok: •Select the test •Select 'reject' 	 <p>OK</p>  <p>Not OK: Select</p> 															
	<ul style="list-style-type: none"> •Turn index switch •If the test is not ok: •Select the test •Select 'reject' 	<p>simulate pick action</p> <table border="1"> <tr> <td>Rotary switch</td> <td></td> <td></td> </tr> <tr> <td>Internal wiring</td> <td></td> <td></td> </tr> </table>  <p>Set switch in next position Wait for 'BEEP', set next position Repeat until all ok</p>  <p>Not OK : Select</p> <table border="1"> <tr> <td>Nozzle detected</td> <td>✓</td> <td>OK</td> </tr> <tr> <td>All positions detected</td> <td>✓</td> <td>>>9<<</td> </tr> <tr> <td>Select follows busy</td> <td>✓</td> <td>Not done</td> </tr> </table> <p>and</p> 	Rotary switch			Internal wiring			Nozzle detected	✓	OK	All positions detected	✓	>>9<<	Select follows busy	✓	Not done
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Nozzle detected	✓	OK															
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Select follows busy	✓	Not done															

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- Human interface LEDs
- Look at the LED
- Select 'inspect'
- Select 'accept' or 'reject'

injection	Select line detected	Ok
LEDs	Acting as walking light	Inspect
d button	Button detected	Not done
d button	Button detected	Not done

Test Selection: All, None

OK: Accept, Not OK: Reject

- Human interface buttons
- Look at the LED
- Select 'inspect'
- Select 'accept' or 'reject'

Push button

Waiting

Reject

- Make repair list
- Look at the id numbers, see 3.5.1

Id	Module	Action	Unit	Expected result	Status
1	Control board	EEPROM parameters		Set to default	Ok
2	Power supply	Power supply current	mA	60-80	66
3		Motor current forward	mA	5-75	65
4		Motor current backward	mA	5-75	67
5	Index unit	Find reference position		Reference position found	Ok
6		Advance to position 23		Position = 23	Ok
7		Find reference position		Reference position found	Ok
8		Move to position 50		Position = 50	Ok
9		Current forward (open)	mA	15-50	28
10		Current backward (open)	mA	15-50	28
11	Peeloff unit	Current delta (open)	mA	0-10	0
12		Current forward (closed)	mA	15-80	40
13		Current backward (closed)	mA	15-80	40
14	Nozzle detection	Simulate pick action		Nozzle detected	Ok
15	Configuration switches	Rotary switch		All positions detected	Ok
16		Internal wiring		Select follows busy	Ok
17		External connection		Select line detected	Ok
18		LEDs		Acting as walking light	Ok
19	Human interface				Failed
20					Ok

Repair item: Human interface

ITF-00012.fm

3.5 Repair instruction

3.5.1 Feeder repair actions to take from the analysing tool

- If tests on the ITF-TTF analysis tool are rejected, perform the actions in this table.
- After each check or action start the test on the tool again.
- List all failed tests and make a repair list, see [3.8 Administration ITF](#) .

Problem	ID no Analysis tool	Description 'Actions to take'	Reference to procedure
Feeder is not recognized on analysis tool?	Identification box	<ul style="list-style-type: none"> •Check chart from operator •Set Index switch to '0' •Turn on power of analysis tool •Check/clean/replace contact pins •Replace controller board 	- - - 3.5.10.1 3.5.5.1
Controller board is Not OK?	1	<ul style="list-style-type: none"> •Replace controller board 	3.5.5.1
Power supply Not OK?	2	<ul style="list-style-type: none"> •Check tool power supply •Replace controller board 	3.5.5.1
Motor current forward/ backward index unit to high?	3 & 4	<ul style="list-style-type: none"> •Clean sprocket wheel assy •Clean feeder, check for tape •Check for lost components •Check E-connection and wiring / flex foil •Check/replace sprocket motor 	3.3 step 5 - - - 3.5.9.3
Find reference position Not OK	5	<ul style="list-style-type: none"> •Clean sprocket wheel assy •Adjust sprocket wheel sensor •Replace sprocket wheel sensor 	3.3 step 5 3.5.9.1 3.5.9.1
Tooth sequence is NOT OK?	6 - 8	<ul style="list-style-type: none"> •Adjust sprocket wheel sensor •Replace sprocket wheel sensor •Check/replace sprocket wheel 	3.5.9.1 3.5.9.1 3.5.9.2
Motor current peel off unit to high/low?	9 - 13	<ul style="list-style-type: none"> •Check/clean peel off unit general •Check grease on main shaft •Check/replace main shaft and pivot press unit •Check/replace peel off front plate, closing mechanism. •Replace peel off motor •Replace peel off base plate 	3.3 step 4 3.5.7.2 step 5 3.5.7.2 3.5.7.6 3.5.7.3 3.5.7.4
Nozzle detection not functioning properly?	14	<ul style="list-style-type: none"> •Clean sensor and receiver •Adjust sensor and receiver. •Replace sensor and /or receiver 	3.3 step 6 3.6.1 3.5.12.2 or 3.5.12.3
Rotary Hex Switch does not work?	15	<ul style="list-style-type: none"> •Replace controller board 	3.5.5.1
Select/busy line Not OK	16 - 17	<ul style="list-style-type: none"> •Check all wiring connections 	No instruction
Human Interface is not functioning correctly?	18 - 20	<ul style="list-style-type: none"> •Check flex foil form human interface to Controller board •Check/replace human Interface •Check/replace controller print 	- 3.5.5.2 3.5.5.1

Figure 13

ITF-00013.fm

3.5.2 Visual inspection ITF with removed side plate

Remove side plate, see 3.5.13 Side plate, replacement

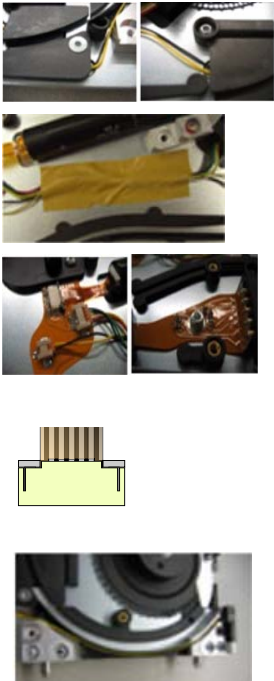
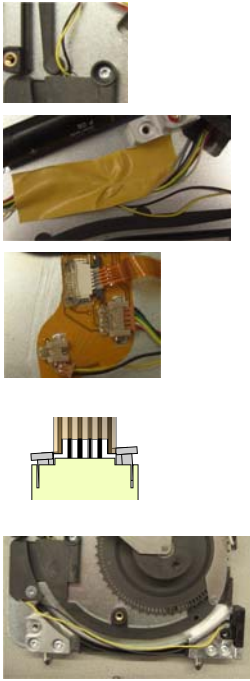
				OK	not OK	
17.	Cables	Check routing, clamping and tape.	<ul style="list-style-type: none">•No cables clamped•Tape in place•All connectors OK•All wires correct routed			Reroute the cables

Figure 14 Visual inspection ITF with removed side plate

ITF-00013.fm

3.5.3 Tightening torques ITF

- Recommended torque all screws: 60 + 10 Ncm except:
 - Reel holder: 90+10 Ncm
 - Receiving sensor: 30+10 Ncm
 - side plate 8, 12, 16 & 24 mm: 30+10 Ncm
 - PCB cover: 30+10 Ncm

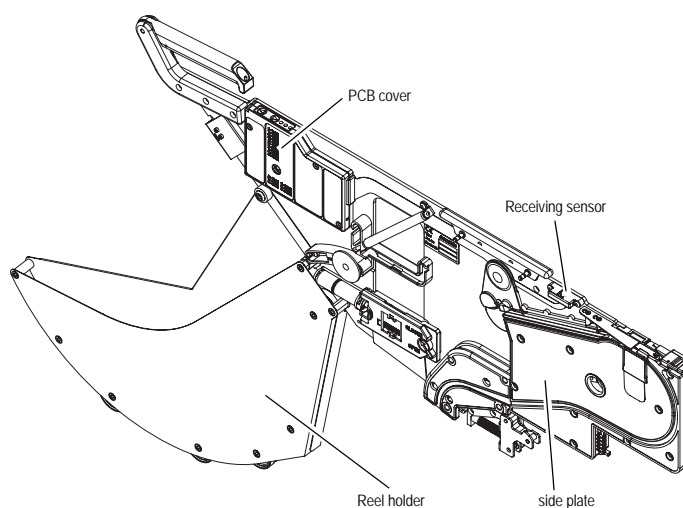


Figure 15

ITF-00042.fm

3.5.4 Recommended tools and materials ITF

Figure 16 gives a recommended list of tools and materials for repairing and cleaning the ITF2 tape feeders. All tools can be obtained locally.

Recommended tools and materials
Cleaning material: - Vacuum cleaner (for in the workshop) - Isopropanol (Reagent Grade Alcohol) Apply to local safety regulation - Lint free tissue paper - Soft lint-free cloth
Brushes: - Small brush
Lubricating material: - Molykote P37 Apply to local safety regulation - Kluber Isoflex Topas NCA52 grease Apply to local safety regulation
Gluing Material: - Loctite 243 Apply to local safety regulation - Loctite 480 Apply to local safety regulation
Fastening Tools: - Allen key s=1.5mm, s=2mm and s=2.5mm or a torque wrench machine - Allen bits s=2mm and s=2.5mm - Torque wrench to read: (20 - 200 Ncm) + Allen bits s=2mm, s=2.5mm
Screwdrivers: - Torx no. T6 and T10 - Phillips 0 - Cross slotted Phillips 00
Wrenches: - Open end/ring spanner s=6mm - Open end/ring spanner s=8mm
Other Tools: - Hammer (small sized only) - Dowel punches ~ 1.5mm (0.06") - Dowel punches ~ 2.5mm (0.10") - Nippers - Pliers (small flat) - A pair of scissors - Tweezers or knife
Special help tools - Nylon cord, Fisherman's cord or similar cord type ~ 1.5mm round (0.06")

Figure 16 List of tools

3.5.5 Control unit, replacement of parts

3.5.5.1 Controller board, replacement

Estimated time to complete [min.]: -

Required special tools. [2.5.3 Feeder shop site tools \(PA 3210/23\)](#)
Torque wrench 20 – 200 Ncm + Allen bit (s = 2mm),

Required part(s) -



ESD SENSITIVE ELECTRONICS
Electro Static Discharge may cause damage to electronics.
Work in an ESD safe environment or use ESD preventive measures.

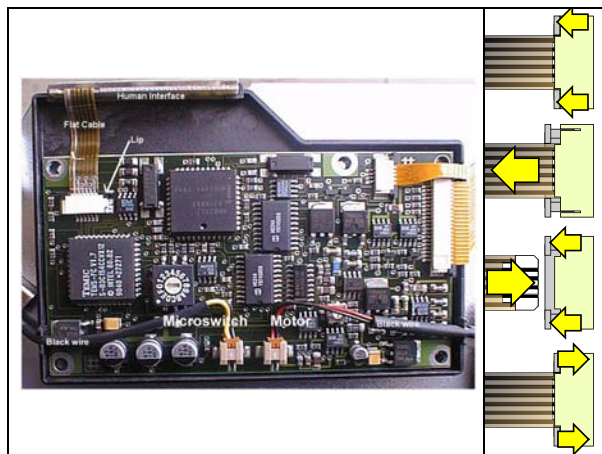
1. Prerequisites

Note: Controller boards have internal data, replacement is only possible with analysis tool.

2. Replacing the controller board

Note: This unit contains ESD sensitive electronics. Take ESD measures to prevent damage to the electronics.

- Remove the cover from the controller board.
- Disconnect all cables and take controller out.
- Assembly in reverse order. Lock the flat cable in the connector.
- Mount cover, check the routing of the 2 black wires. Screw torque: 30+10 Ncm .
- Calibrate the feeder, see [3.7 Calibrating ITF](#)



ITF-00015.fm

ITF-00015.fm

3.5.5.2 Human interface, replacement

Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

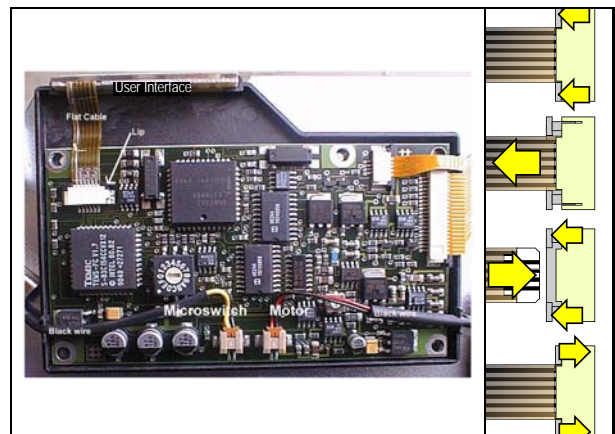


ESD SENSITIVE ELECTRONICS
 Electro Static Discharge may cause damage to electronics.
 Work in an ESD safe environment or use ESD preventive measures.

1. Replacing the user interface

Note: This unit contains ESD sensitive electronics.
 Take ESD measures to prevent damage to the electronics.

- Remove the cover from the controller board.
- Take the user interface (214) out.
- Assembly in reverse order.
- Lock the flat cable in the connector.
- Mount cover, check the routing of the 2 black wires. Screw torque: 30+10 Ncm .



ITF-00043.fm

3.5.6 Reel holder assembly, replacement

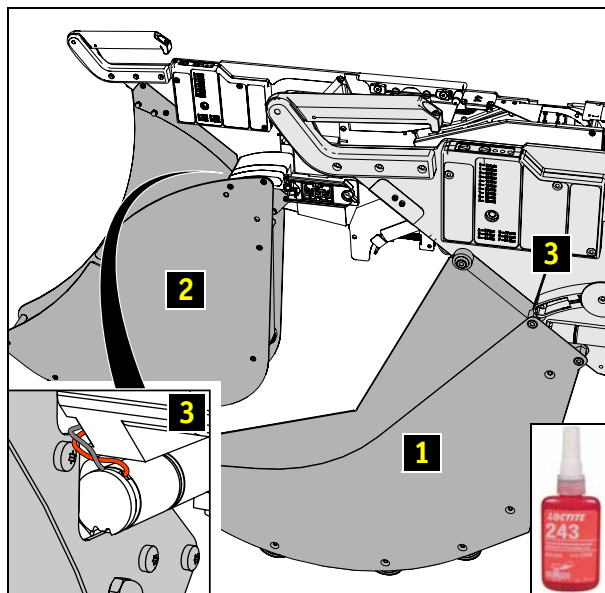
Estimated time to complete [min.]: -
 Required special tools. Allen key s=2mm
 Open end or ring spanner 8mm
 Torque wrench: 20 – 200 Ncm +
 Allen bit (s = 2mm)
 Required part(s) Loctite 243

1. Reel holder assembly, replacement

Reel holders exist in two different technical versions:

- * On 8-24 mm feeders and on older versions 32-56 mm feeders (1)
- * On 32-56 mm release 4.1 feeders (2).
- Screw torque reel holder: 90+10 Ncm.
- Use Loctite 243 on all screws.

Note: Make sure not to damage the 2 wires of the peel off motor (3).



ITF-00016.fm

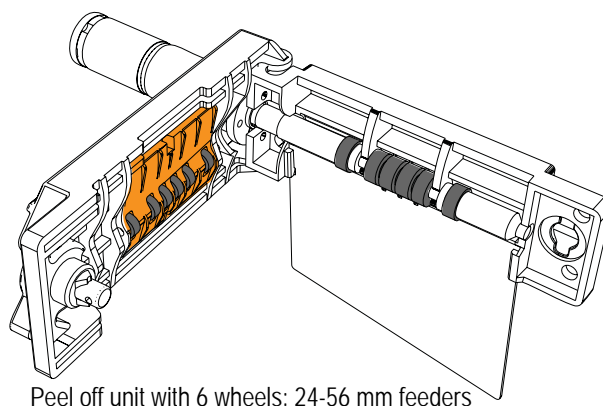
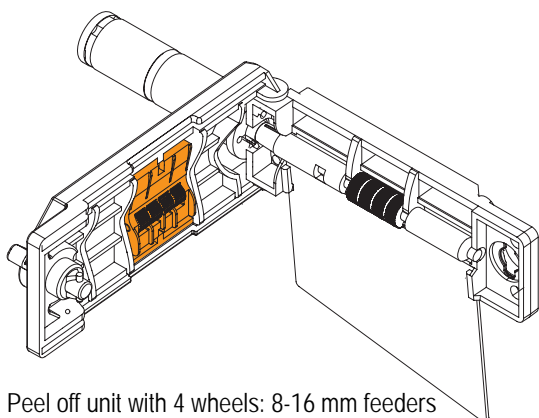
3.5.7 Peel off unit, replacement of parts

3.5.7.1 Pivot press unit, replacement

Estimated time to complete [min.]: -
 Required special tools: -
 Required part(s) -

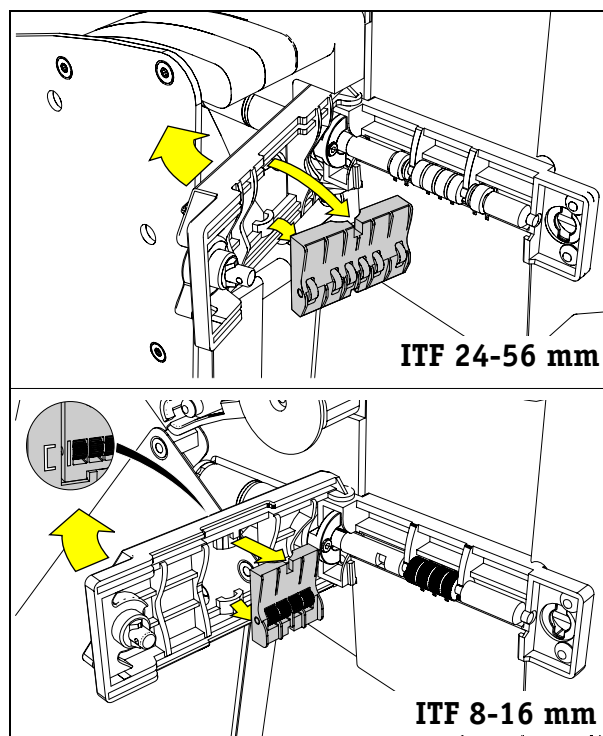
1. Prerequisites

Use the correct version:



2. Replacing the pivot press unit

- Open the peel off front plate and push out the pivot press unit.
- Replace by a new one.
- Push back the pivot press unit and close the peel off front plate. Make sure that the two white marks are lined-up.



ITF-00025.fm

3.5.7.2 Main shaft (pinion), replacement

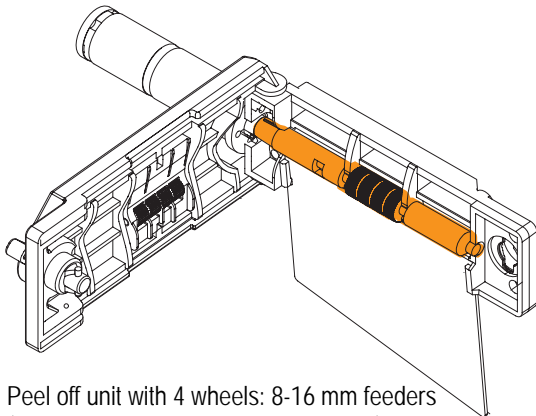
Estimated time to complete [min.]: -
 Required special tools: Allen key 1.5mm
 Required part(s) Klüber Isofless Topas NCA52 grease
 Loctite 243



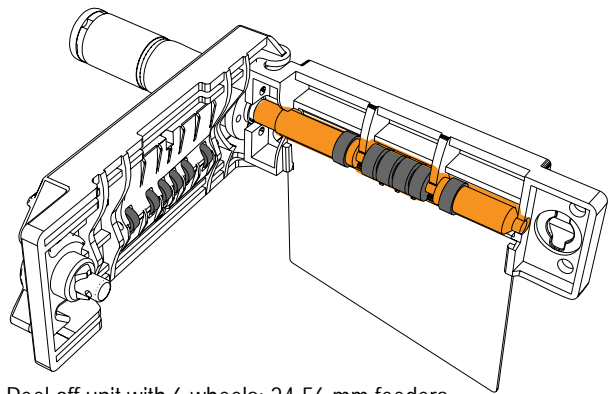
IRRITATING SUBSTANCE
 Direct contact may cause irritation of the skin.
 Avoid direct contact. Use Personal Protection Equipment.

1. Prerequisites

Use the correct version:



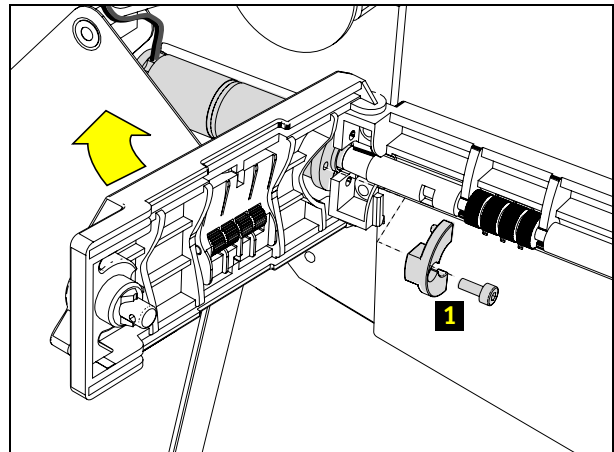
Peel off unit with 4 wheels: 8-16 mm feeders
 (and older versions 24-56 mm feeders)



Peel off unit with 6 wheels: 24-56 mm feeders

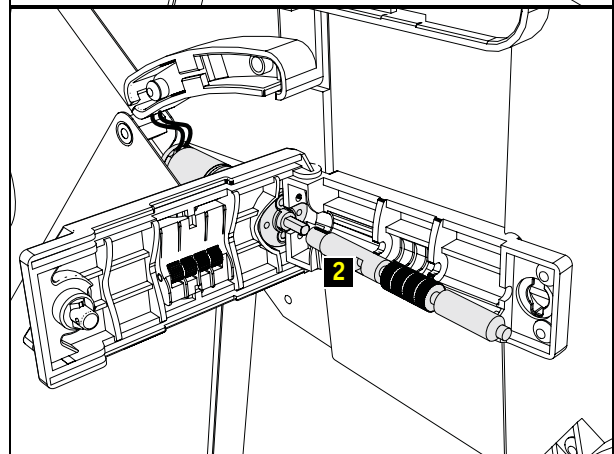
2. Disconnect motor

- Open the peel off front plate.
- Loosen Allen screw (1.5 mm) and remove the rotation lock (1).



3. Replace main shaft

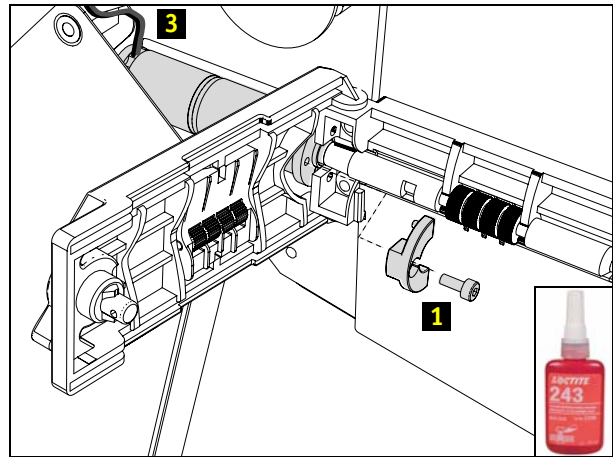
- Tilt the peel off motor a bit upward and slide out the main shaft (2) from the motor axis.
- Hold the motor in place with one hand to make sure the motor wires are not damaged.



ITF-00026.fm

4. Install main shaft

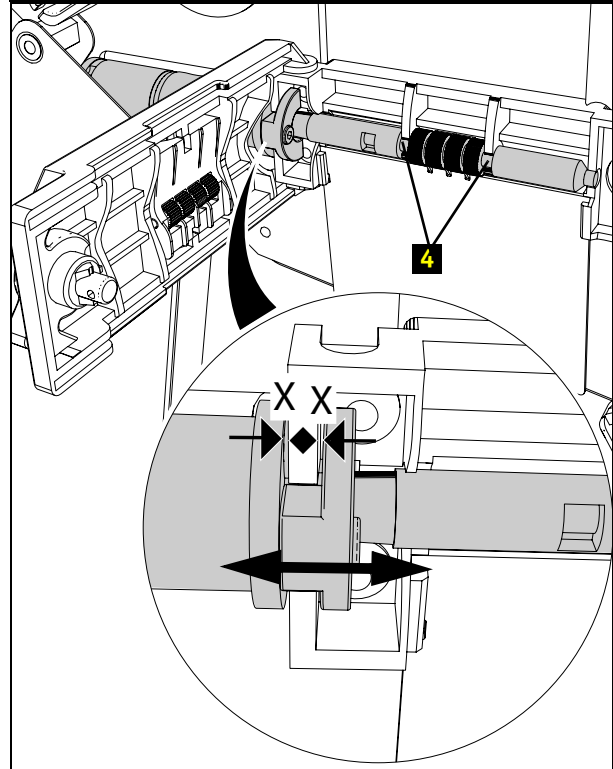
- Make sure that the motor wires run on top of the motor (3) and not twisted.
- Apply loctite 243 to the first two treads of the Allen screw (1).



5. Adjust and grease main shaft

- Middle the space (X) between the motor flange, peel off bottom flange and the rotation lock.
- Add a very small amount of Kluber Isofless Topas NCA52 grease onto the two bearing points (4).

Note: Using Topas NCA52 apply local safety regulations.

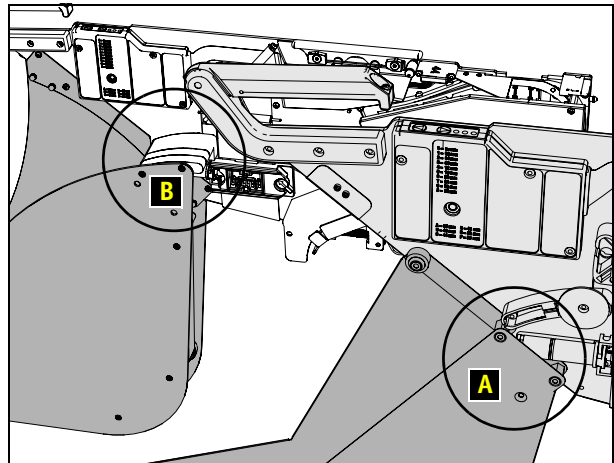


3.5.7.3 Peel off motor, replacement

1. General

Two procedures are available to replace the peel off motor:

- [3.5.7.3.1 Peel off motor on 8-24 mm feeder, replacement](#)
- [3.5.7.3.2 Peel off motor on 32-56 mm feeder, replacement](#)



3.5.7.3.1 Peel off motor on 8-24 mm feeder, replacement

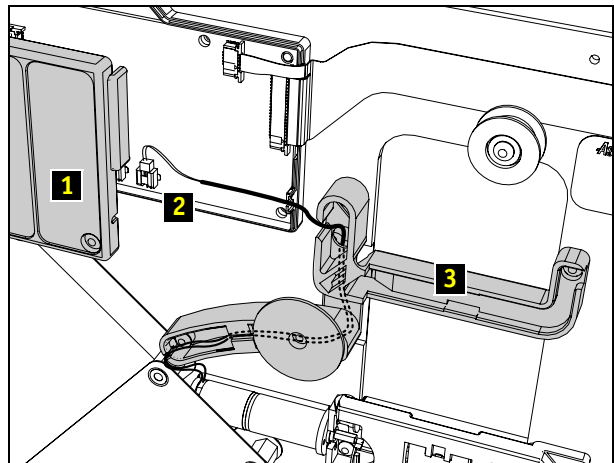
Estimated time to complete [min.]: -
 Required special tools. Allen key s=1.5 and 2 mm
 Required part(s) -

1. Prerequisites

- Remove main shaft, see [3.5.7.2 Main shaft \(pinion\), replacement](#)

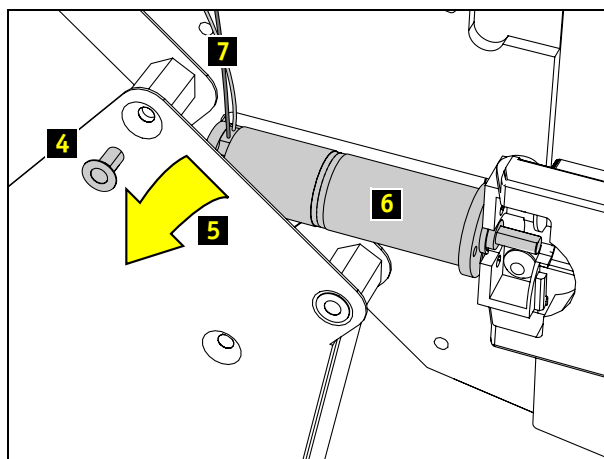
2. Disconnect peel off motor

- Remove the cover (1).
- Disconnect connector (2).
- Remove bracket (3) with 4 screws and take wiring out.



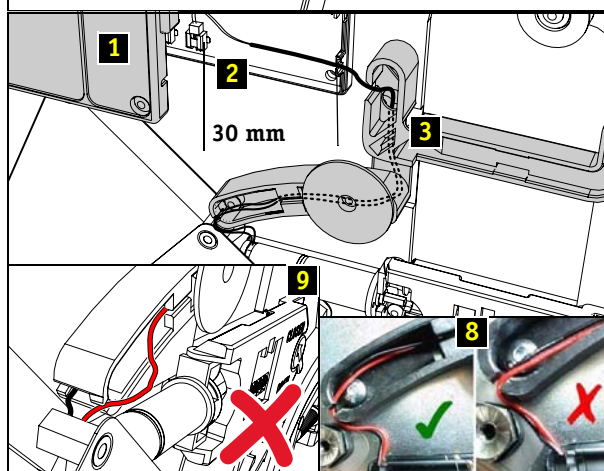
3. Replace peel off motor

- Remove bolt (4) and pull the cover (5) a bit to the front.
- Take out the peel off motor (6).
- Place new peel off motor (6) with the wiring at the top (7).
- Mount bolt (4). Tightening torque 90+10 Ncm.
- Mount main shaft, see [3.5.7.2 Main shaft \(pinion\), replacement](#).



4. Connect peel off motor

- Lead the wiring through the bracket (3).
- Mount the bracket (3) on the feeder.
- Make sure that the motor wire is not too tight so that the motor can move freely (8).
- Connect connector (2).
- The wiring must run within the feeder width (9).
- Mount the cover (1).



3.5.7.3.2 Peel off motor on 32-56 mm feeder, replacement

Estimated time to complete [min.]: -
 Required special tools: Allen key s=1.5 and 2 mm
 Required part(s) -

1. Prerequisites

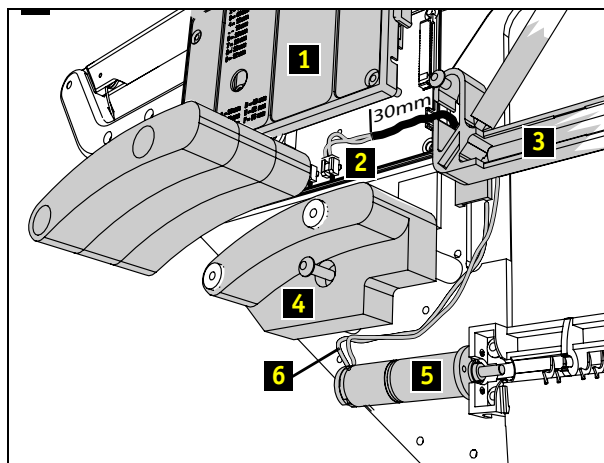
- Remove reel holder, see [3.5.6 Reel holder assembly, replacement](#)
- Remove main shaft, see [3.5.7.2 Main shaft \(pinion\), replacement](#)

2. Disconnect wiring

- Remove the cover (1).
- Disconnect connector (2).
- Loosen bracket (3) with 4 screws and take wiring out.
- Remove the shims (4).
- Take out the peel off motor (5).

3. Replace peel off motor

- Place new peel off motor (5) with the wiring at the top (6).



ITF-00027.fm

4. Connect peel off motor

- Lead the wiring through the bracket (3), The wiring must run within the cut-away.
- Mount the bracket (3) on the feeder.
- Connect connector (2).
- Mount the cover (1).
- Mount the shims, the wiring must run within the cut-away of the base shim (4).
- Make sure the motor wiring (6) is not too tight so that the motor can move freely.

5. Finalize

- Mount main shaft, see [3.5.7.2 Main shaft \(pinion\), replacement](#)
- Mount reel holder, see [3.5.6 Reel holder assembly, replacement](#)

3.5.7.4 Peel off unit excluding motor, replacement

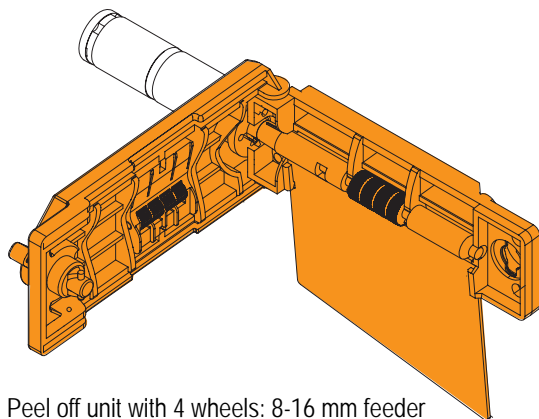
Estimated time to complete [min.]:

Required special tools. Allen key 1.5, 2 mm

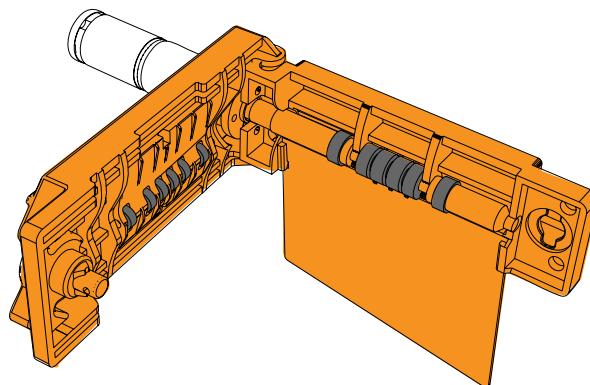
Required part(s)

1. Prerequisites

Use the correct version:



Peel off unit with 4 wheels: 8-16 mm feeder (and older versions 24-56 mm feeders)



Peel off unit with 6 wheels: 24-56 mm feeders

- Remove main shaft, see [3.5.7.2 Main shaft \(pinion\), replacement](#)

2. Replace the peel off unit

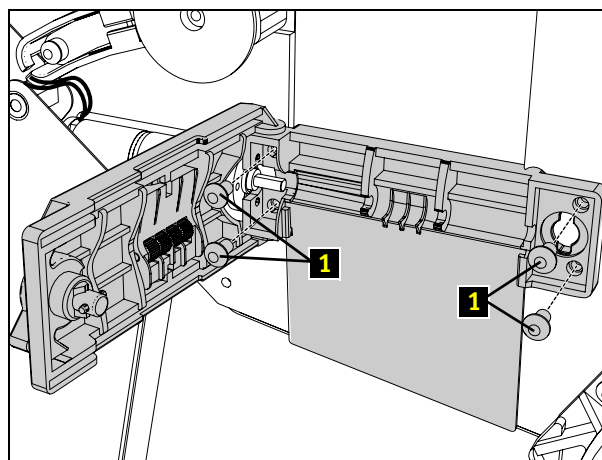
- Loosen the 4 screws (1) and remove the peel off bottom plate, front plate and PSA plate.

Note: On older versions the PSA plate is fixed with 2 screws.

- Replace the complete peel off unit.

3. Finalize

- Mount the main shaft, see [3.5.7.2 Main shaft \(pinion\), replacement](#)



3.5.7.5 Peel off unit including motor, replacement

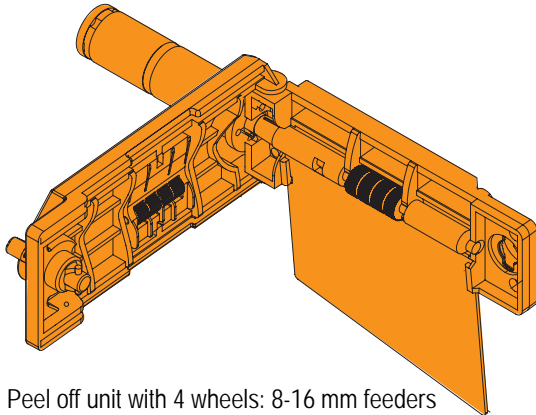
Estimated time to complete [min.]:

Required special tools.

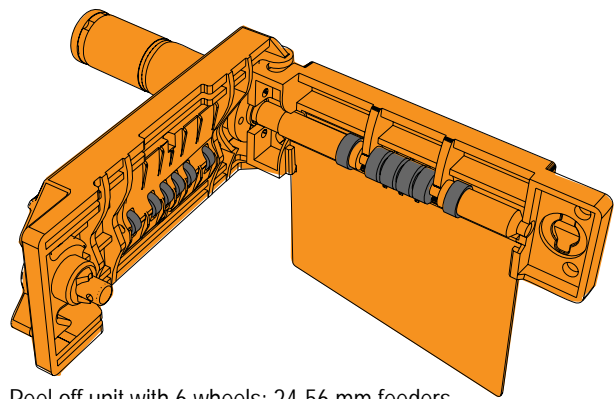
Required part(s)

1. Prerequisites

Use the correct version:



Peel off unit with 4 wheels: 8-16 mm feeders
(and older versions 24-56 mm feeders)



Peel off unit with 6 wheels: 24-56 mm feeders

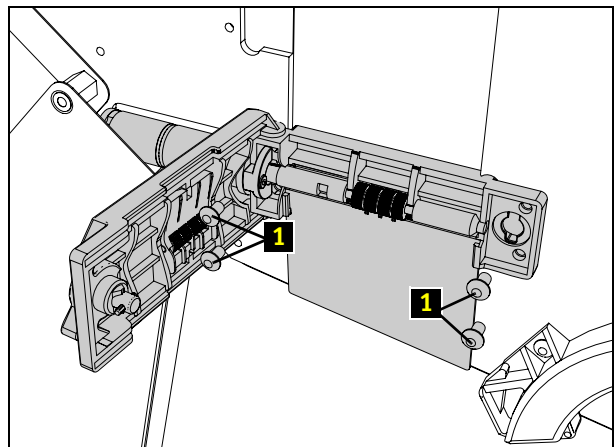
- Remove wiring [3.5.7.3 Peel off motor, replacement](#) , 2. [Disconnect peel off motor](#)

2. Replace peel off unit

- Remove the four bolts (1) and take unit out.
- Mount the new unit.

3. Finalize

- Connect wiring, [3.5.7.3 Peel off motor, replacement](#) , step 4. [Connect peel off motor](#)

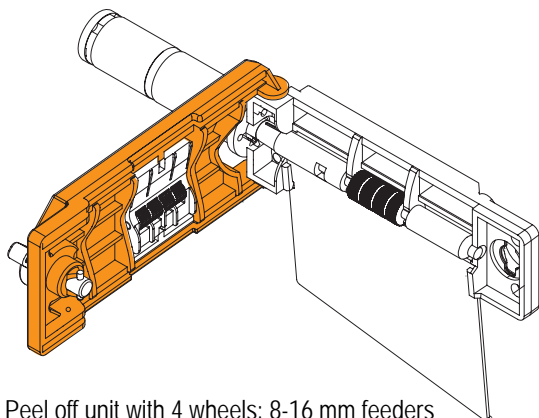


3.5.7.6 Front plate peel off unit, replacement

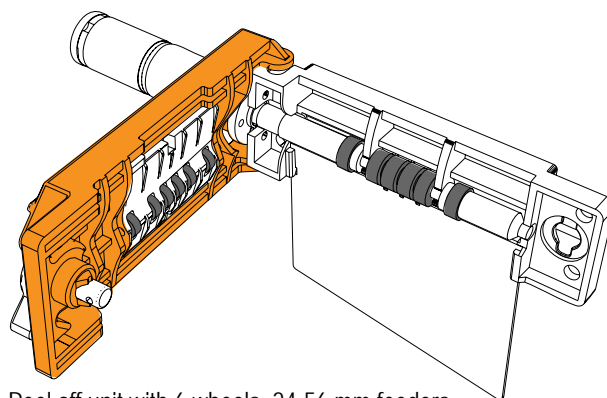
Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Prerequisites

Use the correct version:



Peel off unit with 4 wheels: 8-16 mm feeders
(and older versions 24-56 mm feeders)

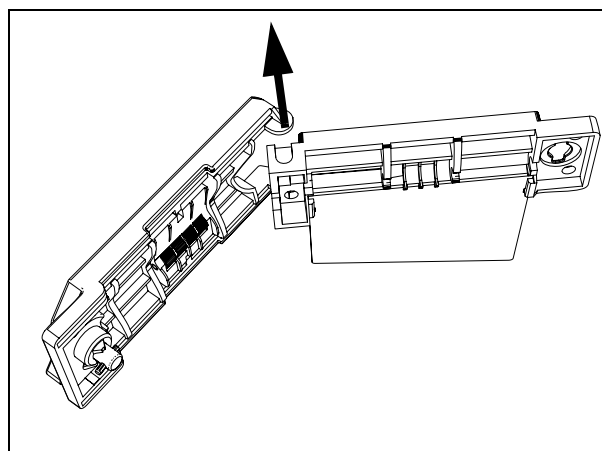


Peel off unit with 6 wheels: 24-56 mm feeders

- Remove peel of unit, see [3.5.7.4 Peel off unit excluding motor, replacement](#)

2. Replace front plate

After removing the peel off unit the front plate can be taken off.



3. Finalize

- Install peel off unit, see [3.5.7.4 Peel off unit excluding motor, replacement](#)

ITF-00030.fm

3.5.8 Clamping mechanism, replacement

Estimated time to complete [min.]: -
 Required special tools. Nylon cord or fisherman's cord ~ 1.5mm
 Dowel punch ~ 1.5mm (0.06"), ~2.5mm (0.10")
 Small hammer, Allen key 2mm, Nippers,
 Pliers small, Torx key T8 or screwdriver
 Required part(s) Isopropanol, Loctite 480, Molykote P37



IRRITATING SUBSTANCE
 Direct contact may cause irritation of the skin.
 Avoid direct contact. Use Personal Protection Equipment.

The instructions below describe the complete procedure for taking the handle apart and disconnecting it from the cable. Extract any necessary part of the procedure, required for the replacement procedure of the part that is applicable to you. The figures of the clamping lever assembly used in the procedure shows only the top part of top assembly.

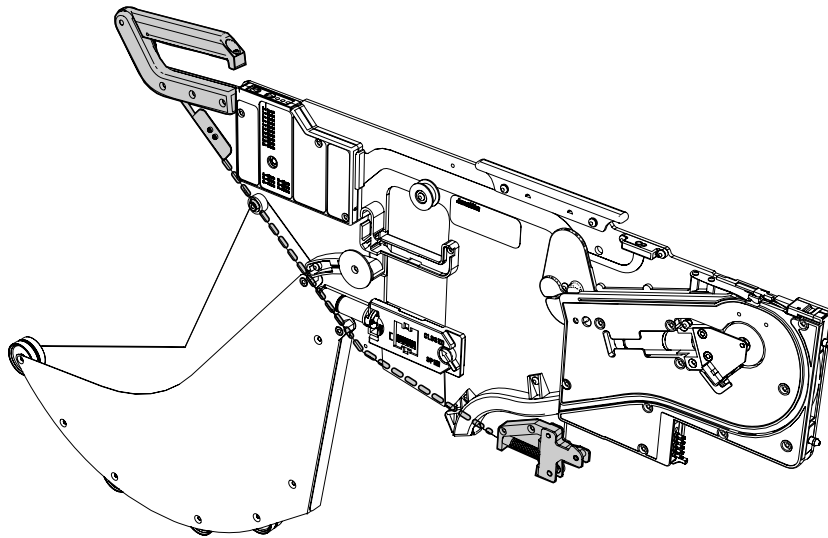
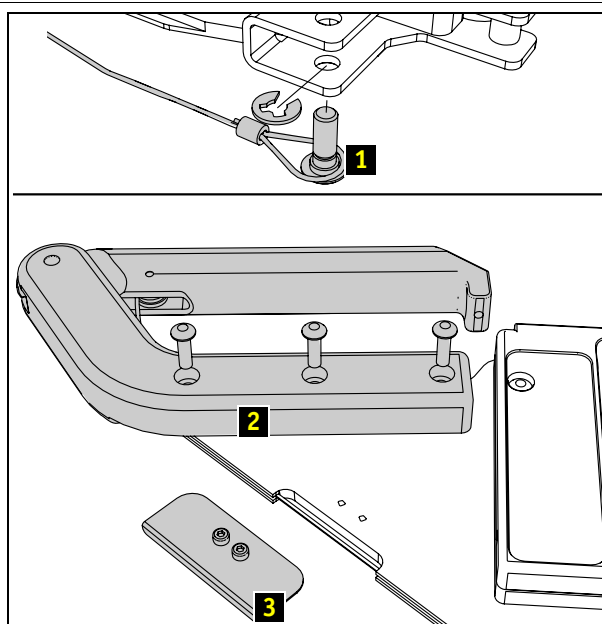


Figure 17 Clamping lever assembly on tape feeder

ITF-00018.fm

1. Remove parts

- Remove the complete reel holder, see [3.5.6 Reel holder assembly, replacement](#) .
- At the bottom, disconnect the cable (1) from the cable holder.
- Loosen the 3 screws and remove the handle assy (2).
- Remove the (microswitch) cover (3).



2. Remove cable from handle

The spring can be secured by a dowel or a tap screw.

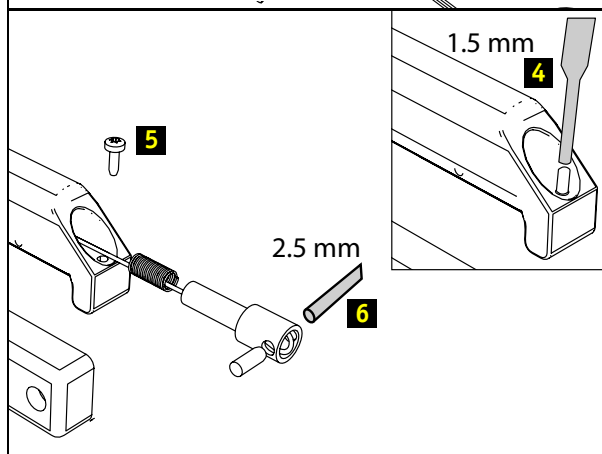
Choose:

- Hammer pin (4) downwards, by using a punch ~ 1.5mm, to release the spring bolt. Pin does not have to be removed from this holder.
- Remove the tap screw (5).

Then:

Hammer pin (6) downward, by using a punch ~ 2.5mm, to disconnect the cable from the end of the spring bolt.

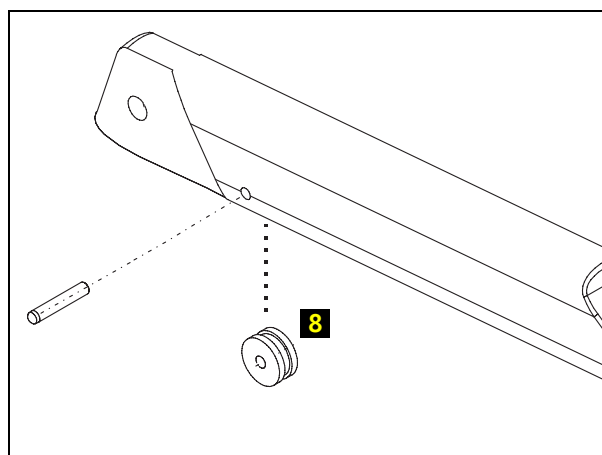
Pin does not have to be removed from this holder.



3. Removing the roller pin from cable

Note: It is easier to insert the cable if the roller (8) is removed. This action can also be done if the roller needs to be replaced.

- Remove pin by using a punch ~ 1.5mm, to remove the roller .

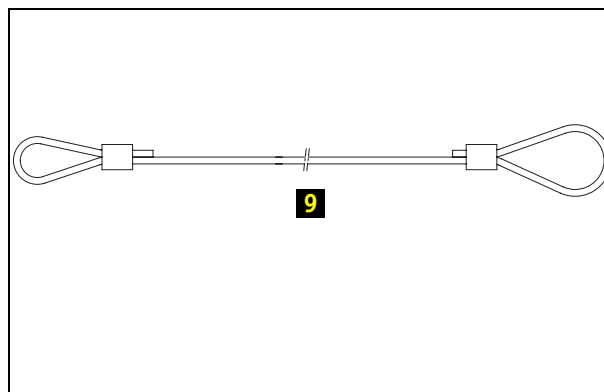


ITF-00018.fm

4. Replace, if necessary, the cable.

A new cable (9) is adjusted from supplier. If the cable was replaced, the top of the cable is the small loop end.

- Insert this part into the rear of the handle and push it through the handle.

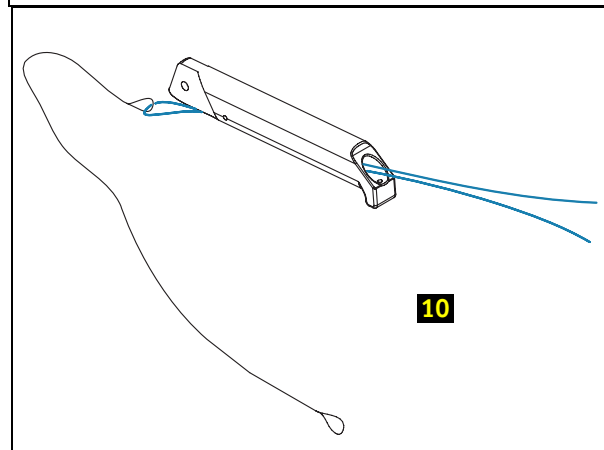


5. Pulling the cable through the handle

Note: A practical tip is to use a fisherman's cord (10) or similar item to pull the cable through the handle.

- Assemble in reverse order until the clamping lever is mounted.
- If necessary, secure pin (5) by adding a small amount Loctite 480 first and/or grease spring bolt (262) with a thin layer Molykote P37. If necessary, remove old grease and glue first by using isopropanol.

Note: Using isopropanol, Loctite 480 and Molykote P37: source locally and apply local safety regulations.



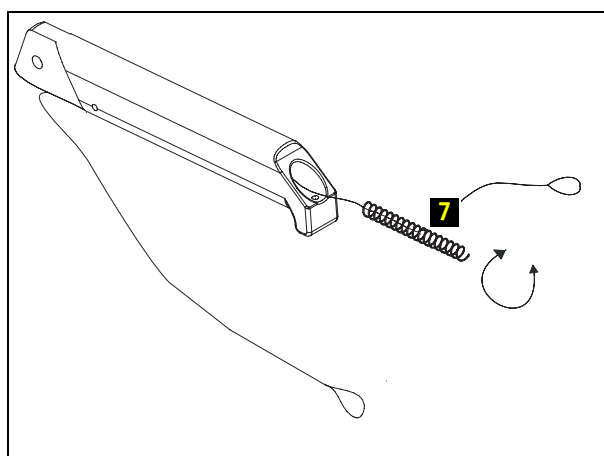
6. Transfer spring to new cable

When the spring must be used again, the spring has to be removed first from the old cable.

This can be done in two ways:

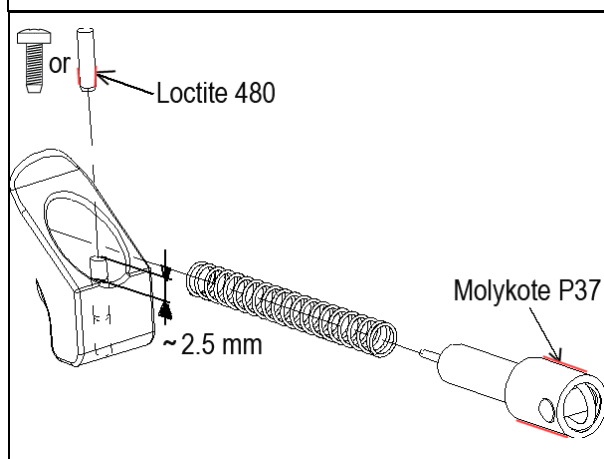
- Slide the spring over the cable. The loop has to be "flattened" first to perform this action.
- Rotate the spring (7) from the cable.

Note: Handle both situations with care, do not deform the spring. Rotating the spring from the cable (or onto) will cause in general the least damage to the spring.



7. Securing and greasing of parts

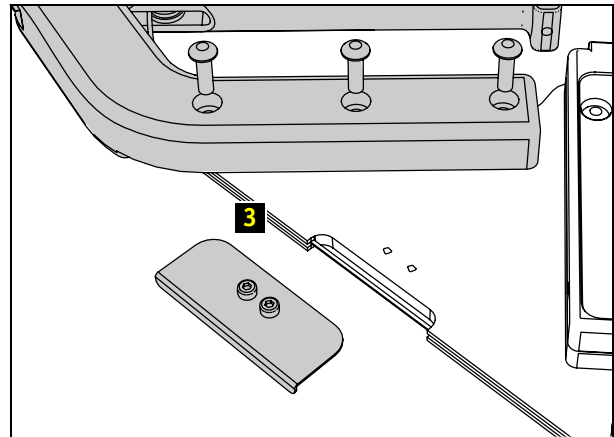
- Turn the feeder with the base plate on top and push the holder + spring inwards to get more cable length.
- The spring can be secured by a dowel or a tap screw, both of these have to be secured with loctite 480.



8. Cable loop microswitch

Note: No micro switch adjustment is required any more because the micro switch is not being used.

- Mount the cable, starting at the top, into the guiding slit of the base plate. Make sure that the cable is not twisted and if the cable has an aluminium block (this block is only present on older versions), that the aluminium block falls into the space of the base plate.
- Mount the reel holder assembly, see [3.5.6 Reel holder assembly, replacement](#) .

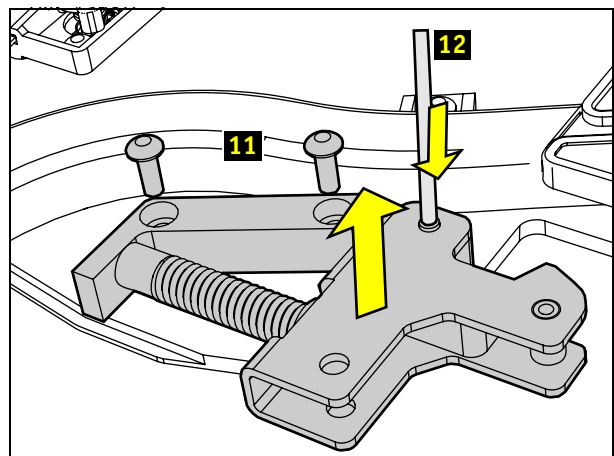


9. Replace, if necessary, the clamping unit

- Loosen the 2 screws (11).
- Push a dowel punch (12) or screwdriver from round 2.5mm. into the hole during the upwards movement of the clamping unit.
- Slide the clamping unit carefully upwards over the dowel punch (12).

Note: The spring pressure keeps the dowel in place. When disconnecting the clamping unit, the spring might release itself in any direction. Take care that actions are taken to hold the spring in place.

- Removing the clamping unit from the base plate.
- Replace the clamping unit by a new one and use the new pin as guiding for placing over the current one.
- Press the unit onto the base plate and let the current pin of the base plate in place!
- Assemble the rest in reverse order.



3.5.9 Sprocket mechanism, replacement of parts

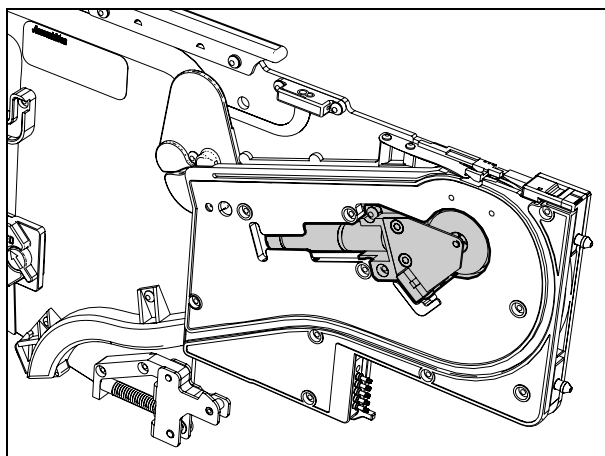
3.5.9.1 Sprocket wheel sensor, replacement

Estimated time to complete [min.]: -
 Required special tools: Allen key/bit 1.5, 2 mm
 Torque wrench
 Required part(s) -

1. Prerequisites

Note: Replacement of the sprocket wheel sensor requires calibration afterwards!

- Remove the side plate, see [3.5.13 Side plate, replacement](#) .



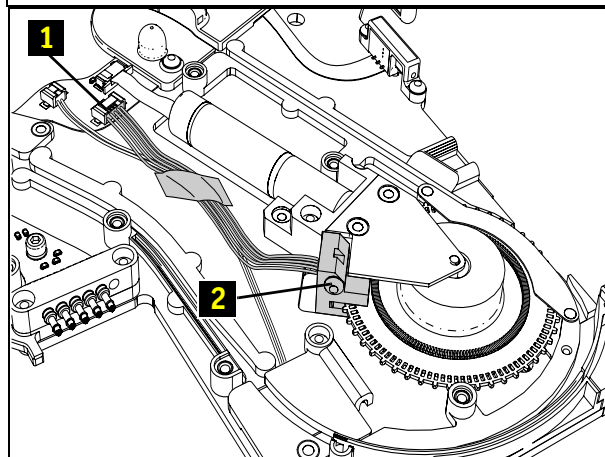
2. Replacing the sprocket wheel sensor

- Disconnect the flat cable of the sprocket wheel sensor (1).
- Lose the screw (2) and remove the sprocket wheel sensor.
- Assemble in reverse order.

Note: The sensor may not touch the sprocket wheel.

3. Finalize

- Mount the side plate, see [3.5.13 Side plate, replacement](#) .
- Calibrate the feeder, see [3.7 Calibrating ITF](#)



3.5.9.2 Sprocket wheel, replacement

Estimated time to complete [min.]:	-
Required special tools:	Allen key/bit 1.5, 2 mm Torque wrench
Required part(s)	-

1. Prerequisites

Note: Replacement of the sprocket wheel requires calibration afterwards!

- Remove the tape cover, see [3.5.12.1 Tape cover, replacement](#).
- Remove the peel off plate, see [3.5.12.4 Peel off plate, replacement](#).
- Remove the side plate, see [3.5.13 Side plate, replacement](#).

2. Removing the sprocket wheel

Note: 8-24 mm feeders: Fix sensor housing (1) with one of the cover screws.

- Remove the rivets with a screw driver and take out the support sheet (2).

Note: The support sheet of feeders larger than 8 mm is mounted with 1 rivet and 1 screw.

- Hammer the sprocket axis downwards, by using a punch of 2.5 mm (4).
- Loosen the 2 screws and remove the retaining plate (3).

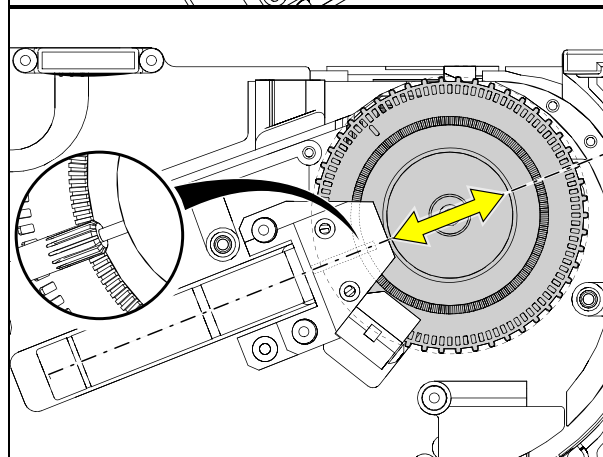
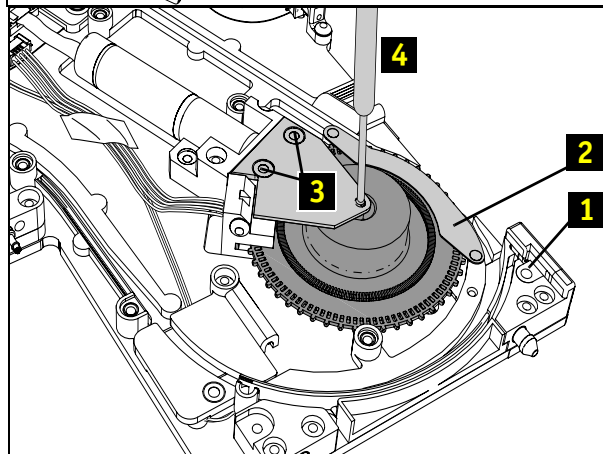
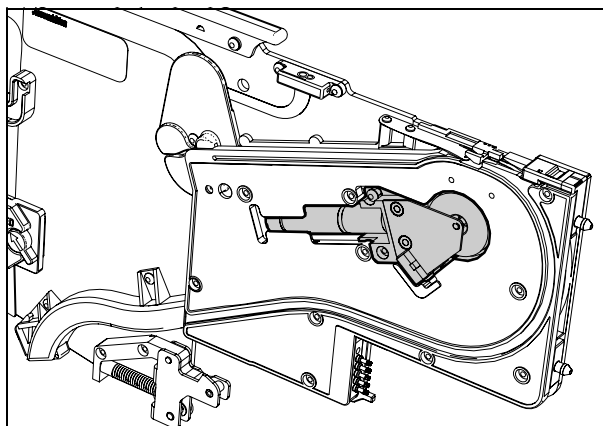
3. Replace the sprocket wheel

- Slide out the sprocket wheel.
- Slide in the sprocket wheel without any force.

Note: Use as reference the line, which runs over the centre of the sprocket motor.

Do not damage the small teeth of the sprocket wheel. Make sure the support sheet (2) is mounted with the 2 sunken holes upside.

- Assembly in reverse order.



4. Finalize

- Mount the side plate, see [3.5.13 Side plate, replacement](#).
- Mount the peel off plate, see [3.5.12.4 Peel off plate, replacement](#).
- Mount the tape cover, see [3.5.12.1 Tape cover, replacement](#).
- Calibrate the feeder, see [3.7 Calibrating ITF](#)

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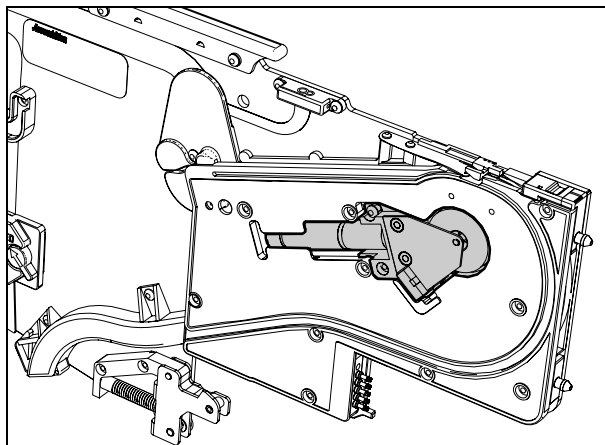
3.5.9.3 Sprocket motor, replacement

Estimated time to complete [min.]: -
 Required special tools. Allen key/bit 1.5, 2 mm
 Torque wrench
 Required part(s) Loctite 7400

1. Prerequisites

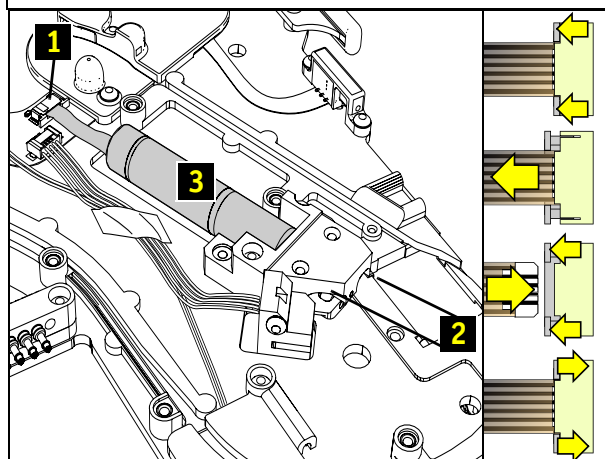
Note: Replacement of the sprocket motor requires calibration afterwards!

- Remove sprocket wheel, see [3.5.9.2 Sprocket wheel, replacement](#)



2. Replacing the sprocket motor

- Disconnect the flat cable of the index motor from the assy flex foil (1). Push lips upward to disconnect the flat cable from the connector.
- Loosen the 2 Allen screws (2) and remove the index motor. Use an Allen screwdriver s=1.5 mm (first choice) or an Allen key s=1.5mm.
- Replace the damaged motor (3) by a new one. Make sure to mount the flat cable with the contact upside.



3. Finalize

- Mount the sprocket wheel, see [3.5.9.2 Sprocket wheel, replacement](#)
- Calibrate the feeder, see [3.7 Calibrating ITF](#)

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3.5.10 Base plate, replacement of parts

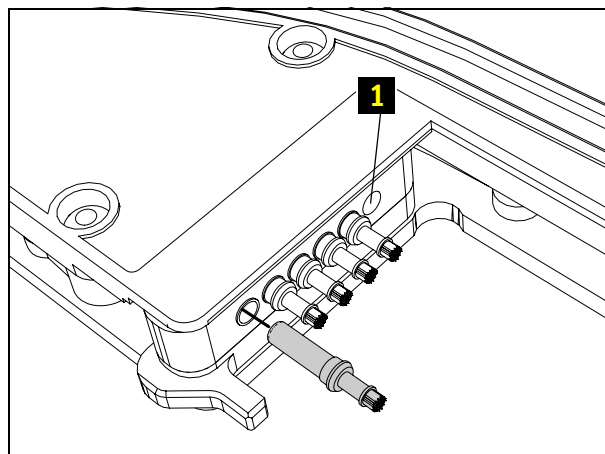
3.5.10.1 Contact pins, replacement

Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Replacing the contact pins

Note: The ITF2 has 5 contact pins. The top hole (1) is not occupied.

- The pins can be replaced manually.



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3.5.10.2 Pre-guiding, replacement

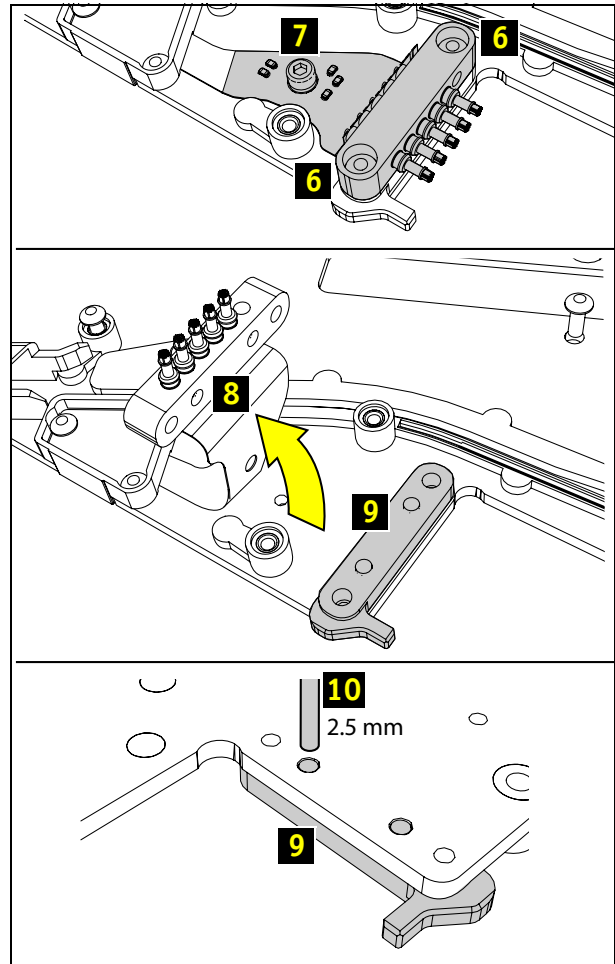
Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Replace pre-guiding

- Remove the side plate for 8-24 mm feeders, see [3.5.13 Side plate, replacement](#)
- Remove both screws (6) and Allen screw (7).
- Put the contact block aside (8) and turn the feeder upside down.
- Hammer the 2 pins of the pre-guiding (9) downward out-off the base plate, by using a punch ~ 2.5mm (10) to disconnect the guiding from the base plate.

Note: Make sure not to damage the contact block cable.

- Assemble in reverse order. If necessary adjust the sensors.



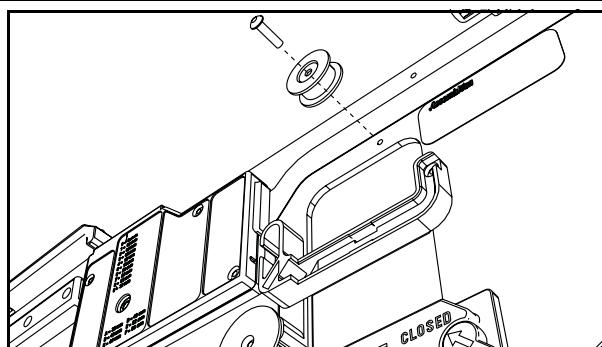
3.5.11 Top foil and top guide, replacement of parts

3.5.11.1 Top foil routing axis, replacement

- Estimated time to complete [min.]: -
- Required special tools. Allen key 2mm / Torx T10
Allen key 1.5mm (removing the guiding pin)
- Required part(s) -
- Choose:
- New version 8mm feeder, see 3.5.11.1.1
 - 12-32mm feeders and older versions 8mm feeders, see 3.5.11.1.2
 - 44-56mm feeders, see 3.5.11.1.3

3.5.11.1.1 Top foil roller new version 8mm feeder, replacement

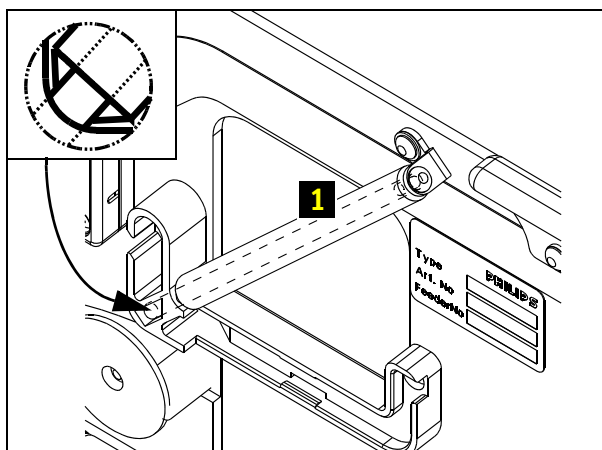
1. Remove the screw and the roller



3.5.11.1.2 Top foil routing axis on 12-32mm feeders (and older versions 8mm), replacement

1. Remove routing axis

- Loosen the screw and remove the routing axis, bracket and/or PTFE sleeve (1) out of the routing block.
- Remove the old axis and/or sleeve and replace by a new one. Make sure to mount the sleeve correctly, see detail.
- Assemble in reverse order.



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3.5.11.1.3 Top foil routing axis on 44-56mm feeders, replacement

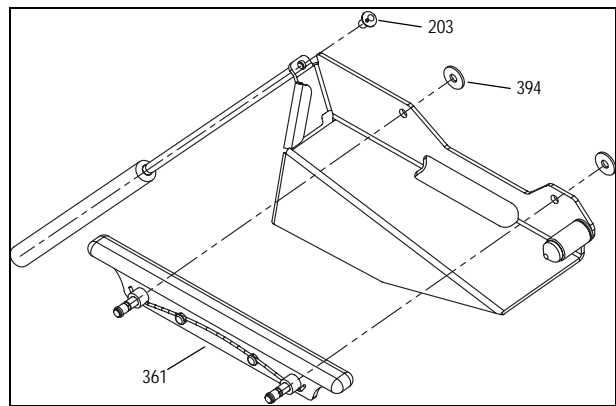
1. Remove routing axis

The description below removes all parts. Replace only the relevant defective or damaged parts.

- Loosen screw (20-3).
- Loosen the guiding axis and remove the top guiding (361). Make sure not to loosen the two washer's (394).
- Replace any of the defective or damaged parts.
- Assembling is done in reverse order. Make sure to secure the top guiding by adding Loctite 243 first.

See [3.5.11.2 Top guide, replacement](#)

- All parts of the 44 and 56 mm tape guiding are identical except the two guiding axis.



3.5.11.2 Top guide, replacement

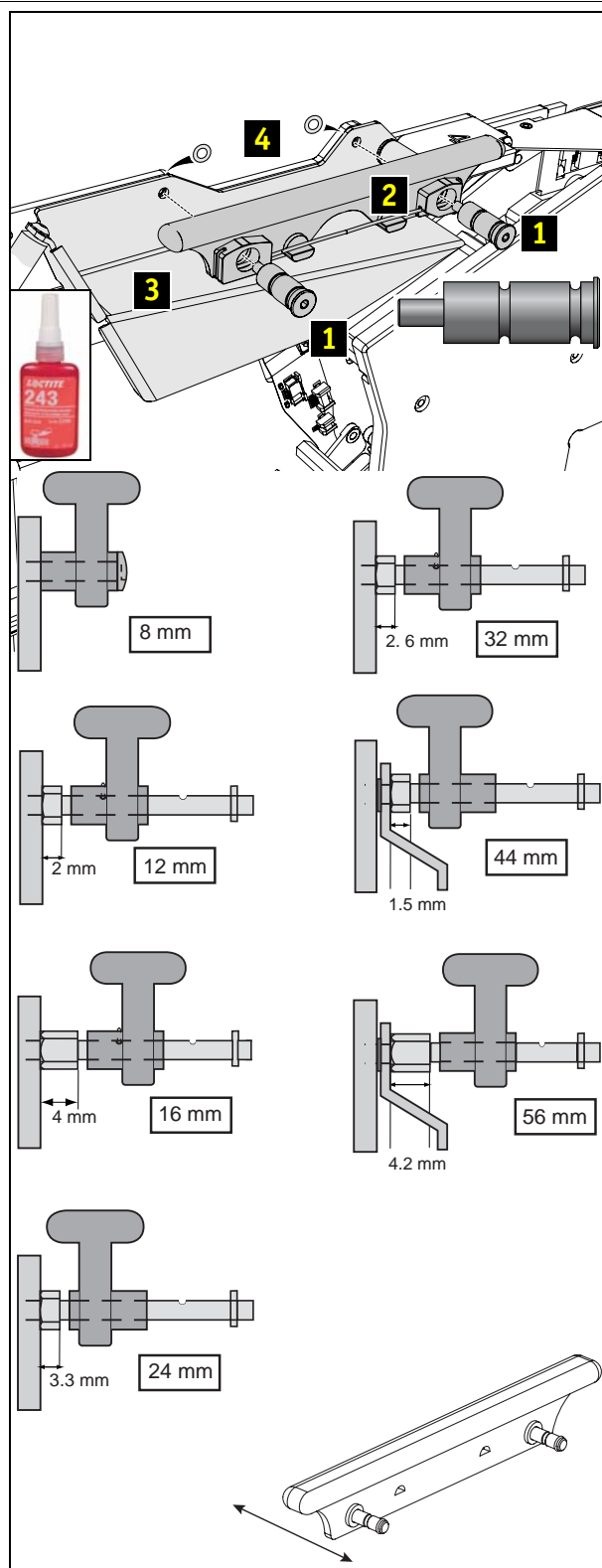
Estimated time to complete [min.]: -
 Required special tools: Torque wrench 20 – 200 Ncm + Allen bit 2mm
 Required part(s) Loctite 243

1. Replace top guide

Note: The top guide from ITF2 feeders 24 and 44 mm is mirrored.

- Loosen the 2 guiding pins (1) and remove top guiding (2). Use the correct length after replacement.
- 44 and 56 mm ITF: Position the tape guide (3) with the washers (4)
- Add a small amount of loctite 243 to the first three treads to secure the guiding pins. Tightening torque: 60 + 10 Ncm.

Note: Using Loctite 243: source locally and apply local safety regulations.



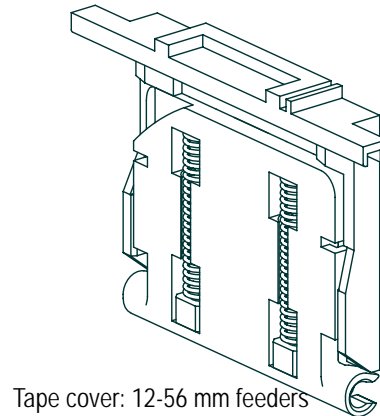
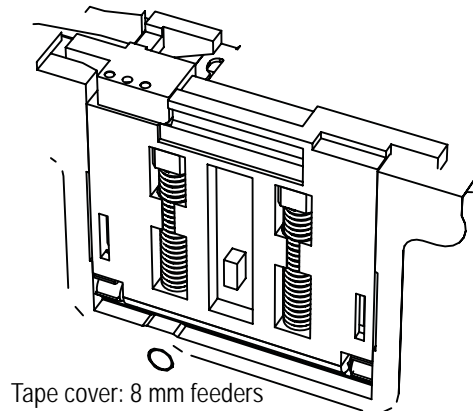
3.5.12 Pick position, replacement of parts

3.5.12.1 Tape cover, replacement

Estimated time to complete [min.]:
 Required special tools.
 Required part(s)

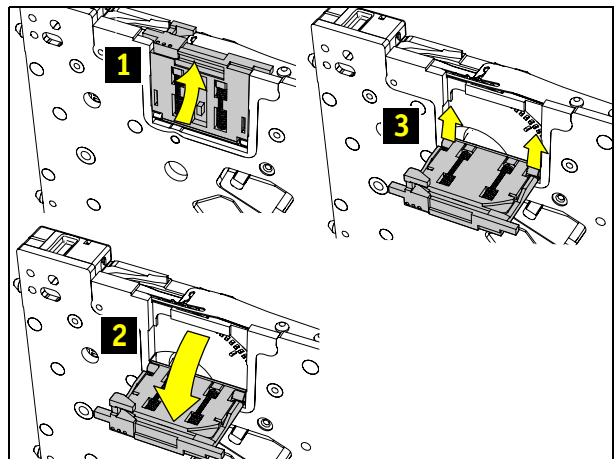
1. Prerequisites

Use the correct version:



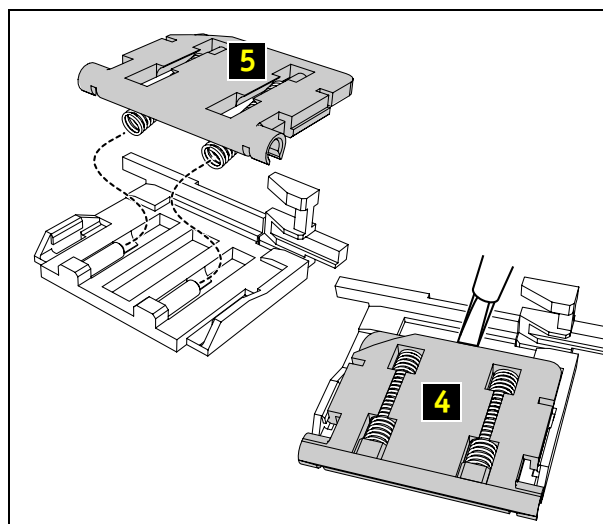
1. Replace tape cover

- Press the tape cover upward (1)
- Turn it towards you in a 90° angle (2).
- Take the tape cover off by pressing it upwards a little bit at both sides (3).
- Assembly in reverse order.



2. Replace base plate

- Remove the base plate (4) from the tape cover by using a small screwdriver (5).
- Replace the base plate and/or the springs.
- First mount the 2 springs in the base plate (5).



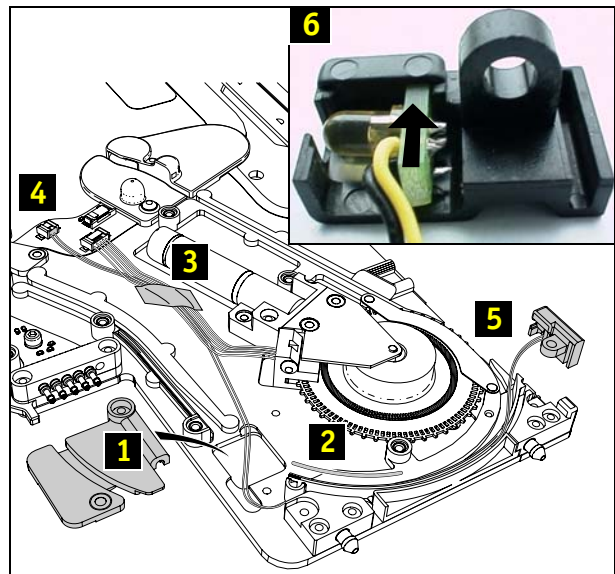
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3.5.12.2 Transmitting sensor, replacement

Estimated time to complete [min.]: -
 Required special tools. Torque wrench 20 – 200 Ncm + Allen bit 2mm
 Vacuum cleaner (for in the workshop)
 Screwdriver Philips 0
 Required part(s) -

1. Replacing the transmitting sensor

- Remove the side plate, see [3.5.13 Side plate, replacement](#)
- Loosen the screws and remove the protection cover (1).
- Remove rubber cord (2, on 12-56 mm feeders)
- Remove the glue strip (3) from the base plate.
- Disconnect the 2 wires from the PCB wire connector (4).
- Remove the transmitting sensor and housing (5) with wiring.
- Replace the sensor by a new one. Push the sensor PCB first into the slit of the housing (6). If damaged, replace the housing.
- Mount the sensor PCB and housing (5) into the slit of the base plate.



Note: Make sure not to damage the 2 wires of the transmitting sensor. This means that the 2 wires are inserted well into the slit (2).

- Connect the 2 wires to the PCB connector (4).
- Mount and secure the protection cover (1).
Make sure that the wiring runs into the 2 gaps of the base plate.
- Replace rubber cord (2, on 12-56 mm feeders).
- Add the self adhesive tape (3).
- Mount the side plate, see [3.5.13 Side plate, replacement](#)
- Check the function, [3.6.1 Sensor alignment, adjustment and testing](#)



NOTE: It is possible to mount the LED in its cover upside down. If the sensor is removed, ensure the LED is centered in the cover.

3.5.12.3 Receiving sensor, replacement

Estimated time to complete [min.]:	-
Required special tools:	Torque wrench 20 – 200 Ncm + Allen bit 2mm Vacuum cleaner (for in the workshop) Screwdriver Philips 0
Required part(s)	-



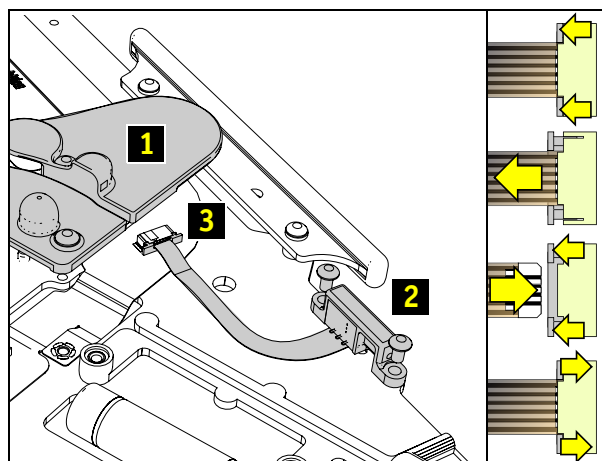
IRRITATING SUBSTANCE
Direct contact may cause irritation of the skin.
Avoid direct contact. Use Personal Protection Equipment.



NOTE: Using isopropyl alcohol: source locally and apply local safety regulations.

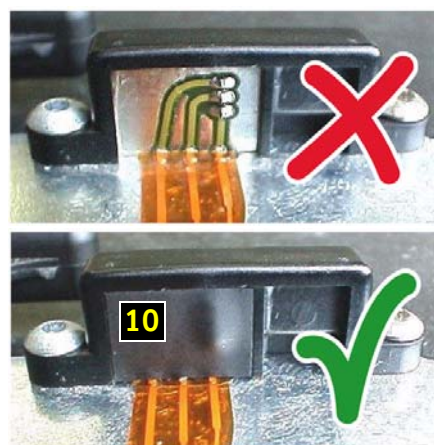
1. Replacing the receiving sensor

- Remove the side plate (only 8 and 12 mm feeders), see [3.5.13 Side plate, replacement](#).
- Remove the cover (1).
- Loosen the 2 screws and remove sensor with housing (2).
- Disconnect the cable from the main cable by pushing the lips upwards (3).
- Clean (if necessary) the sensor and base plate with a small brush or soft lint free cloth moistened in isopropyl alcohol.
- Replace the receiving sensor, and if necessary the housing, Tightening torque: 30+10 Ncm.



2. Stick screening plate on the receiving sensor

- Take a new screening plate and fit this well into the receiving cover over the full surface (10).
- Press firmly into position (do not dislocate the receiver).
- Check the function, [3.6.1 Sensor alignment, adjustment and testing](#)



3.5.12.4 Peel off plate, replacement

Estimated time to complete [min.]: -
 Required special tools. Phillips cross-slotted screwdriver no. 0
 Required part(s) -

1. Peel off plate, replacement

- Loosen the 2 screws and remove the peel off plate.
- Replace the peel off plate and secure with the screws.

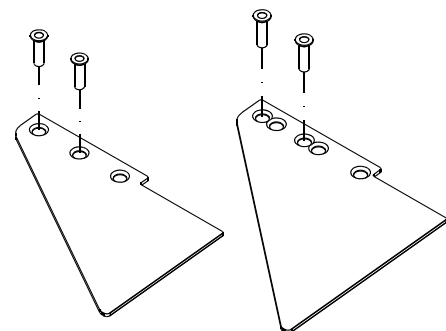
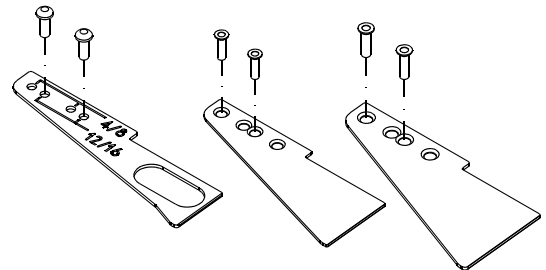
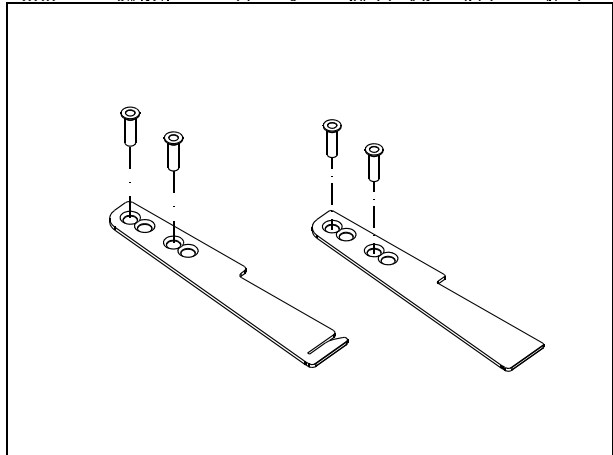
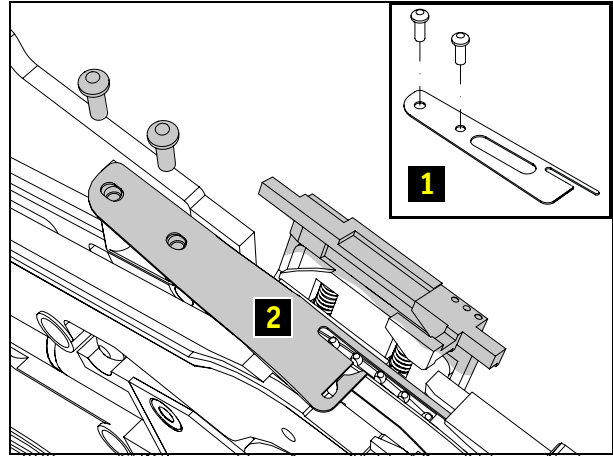
Note: Replace the old type peel off plate 8mm (1, without slit) by the new type (2, with slit) to prevent components from sticking to the cover tape due to static charge.

Note: All peel off plates greater than 8mm can be adjusted for handling of a greater range of components.

- 12mm peel off plate with and without slit with standard adjustment.

- 16, 24 and 32mm adjustable peel off plate with standard adjustment.

- 44 and 56mm peel off plate with standard adjustment.



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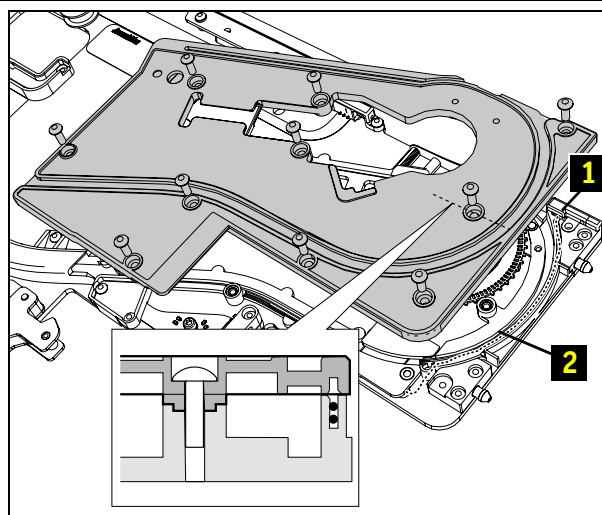
3.5.13 Side plate, replacement

Estimated time to complete [min.]: -
 Required special tools. Torque wrench to read: 20 – 200 Ncm + Allen bit 2mm, vacuum cleaner (for in the workshop)
 Required part(s) -

3.5.13.1 Side plate of 8 mm feeder, replacement

1. Replace side plate

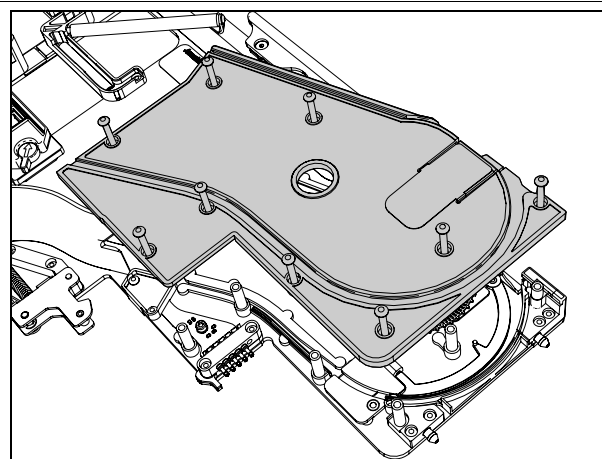
- Remove the 10 screws which secure the side plate onto the base plate. Do not discard screws.
- Note:** The front sensor housing (1) is held by one of the screws.
- Remove small trapped components from the base plate.
- Replace the side plate.
- Make sure that the all cam shapes of the side plate fall into the positioning gaps of the base plate, you should hear a click.
- Make sure not to damage the wiring of the transmitting sensor (2).
- Secure the side plate with the 10 Allen screws. Tightening torque 30+10Ncm.
- Adjust sensor, see [3.6.1 Sensor alignment, adjustment and testing](#) .



3.5.13.2 Side plate of 12-24 mm feeders, replacement

1. Replace side plate

- Remove the 9 screws , which secure the side plate onto the base plate. Do not discard screws and distance bushes.
- Note:** The front sensor housing is held by one of the screws. To avoid always executing the sensor adjustment procedure try to keep the sensor in its original location.
- Remove small trapped components from the base plate.
- Remove the cover and replace by a new one. Mount all bushes.
- Adjust sensor, see [3.6.1 Sensor alignment, adjustment and testing](#) .

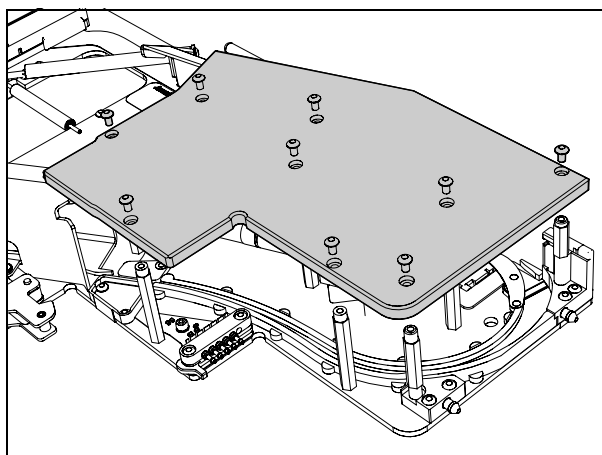


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3.5.13.3 Side plate of 32-56 mm feeder, replacement

1. Replace side plate

- Remove the 9 screws, which secure the cover onto the base plate. Do not discard screws and studs.
- Remove the cover and replace by a new one.



3.5.13.4 Position units, replacement

Estimated time to complete [min.]:	-
Required special tools.	Open end/ring spanner s=6mm (only 32-56mm types) Torque wrench to read 20 –200 Ncm + bit s=6mm Allen key 2, 2.5 mm. Small hammer and dowel punch 2.5 mm (0.10")
Required part(s)	Loctite

1. General

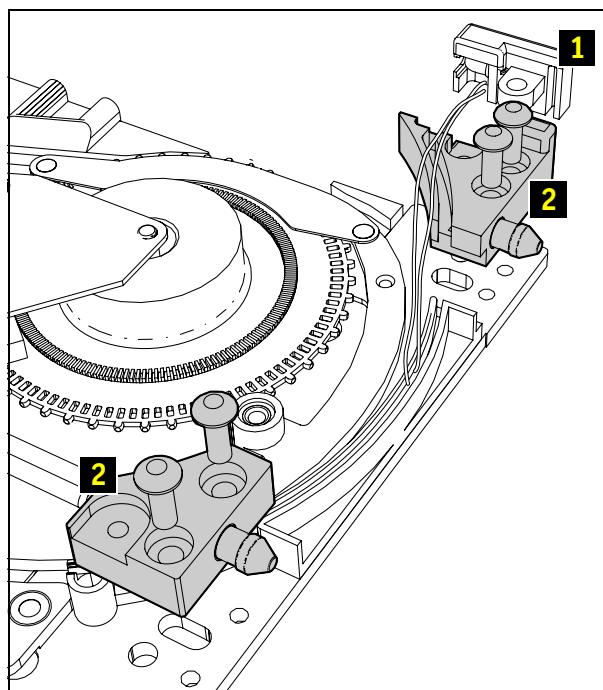
Two procedures are available to replace the position units:

- Position unit on 8-16 mm feeders, [see 3.5.13.4.1](#)
- Position unit on 24-56 mm feeders, [see 3.5.13.4.2](#)

3.5.13.4.1 Position units, 8-16 mm feeders, replacement

1. Remove position units

- Remove the side plate, see [3.5.13 Side plate, replacement](#) .
- Put the transmitting sensor (1) aside.
- Remove screws and remove position unit (2).
- Assemble the position unit in reverse order.
- Apply Loctite between position unit and base plate.
- Install the side plate, see [3.5.13 Side plate, replacement](#)
- Adjust the sensor (1), see [3.5.12.2 Transmitting sensor, replacement](#)

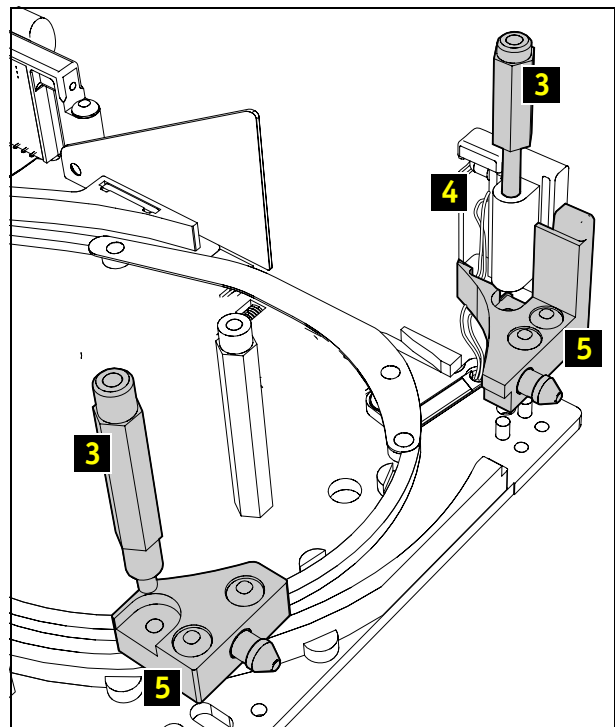


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3.5.13.4.2 Position units, 24-56 mm feeders, replacement

1. Remove position units

- Remove the side plate, see [3.5.13 Side plate, replacement](#).
- Remove the spacers (3).
- Put the transmitting sensor (4) aside.
- Remove screws and remove position unit (5).
- Assemble the position unit in reverse order.
- Apply Loctite between position unit and base plate.
- Screw torque of the side plate spacer (3):
60 + 10 Ncm.
- Adjust the sensor (4), see [3.5.12.2 Transmitting sensor, replacement](#)
- Install the side plate, see [3.5.13 Side plate, replacement](#)



3.6 Adjustments and testing

3.6.1 Sensor alignment, adjustment and testing

Estimated time to complete [min.]:

Required special tools. Optical filter tool **or** Analysis tool

Required part(s)

1. General

After changing the peel off plate to a different pitch or when using certain types of top foil the feeders may not work properly anymore. This problem is noticed mainly on 24-56 mm ITF2r2 feeders.

The solution of this problem is to re-adjust the index sensor **without** a peel off plate.

Choose:

- Sensor adjustment with analysis tool, see 3.6.1.1
- Sensor adjustment with optical filter tool, see 3.6.1.2

3.6.1.1 Sensor adjustment with analysis tool

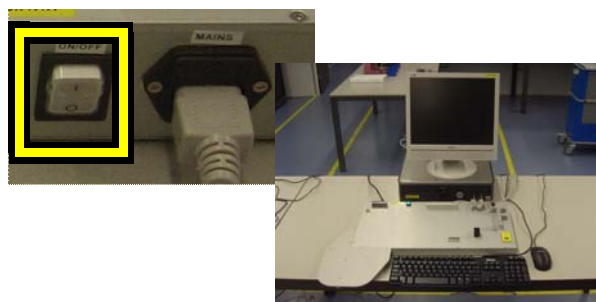
2. Switch on the computer



3. Start up the program with the icon 'ITF-TTF Analysis tool'

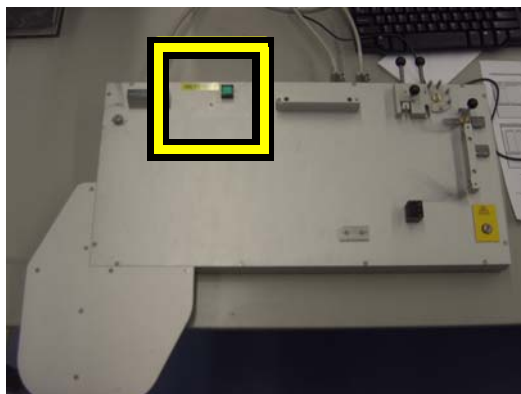


4. Switch on the 'Mains switch' on the tool

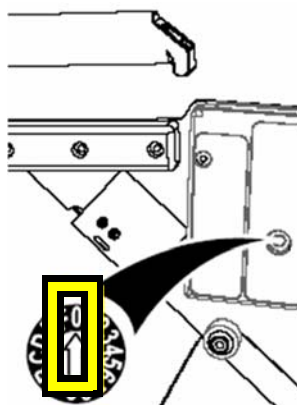


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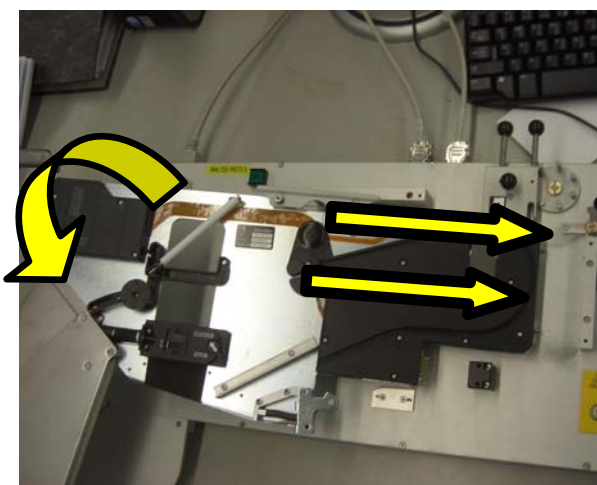
5. Make sure the 'DUT Power' of the tool is switched off. The switch is NOT illuminated



6. Set the switch to "0" on the ITF

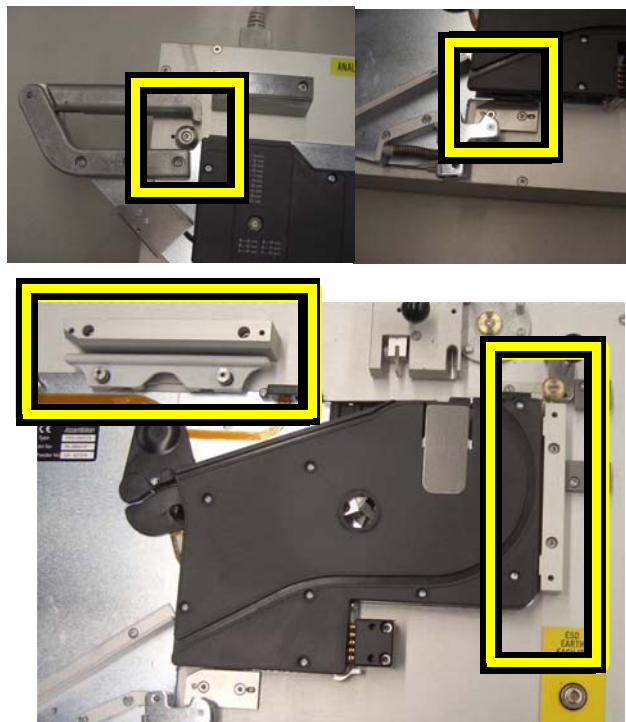


7. Place the ITF in the 'tool-table'

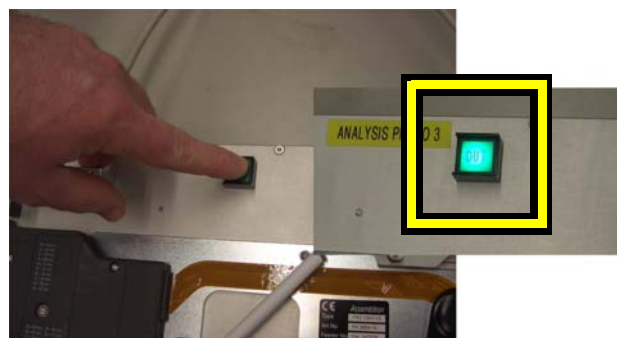


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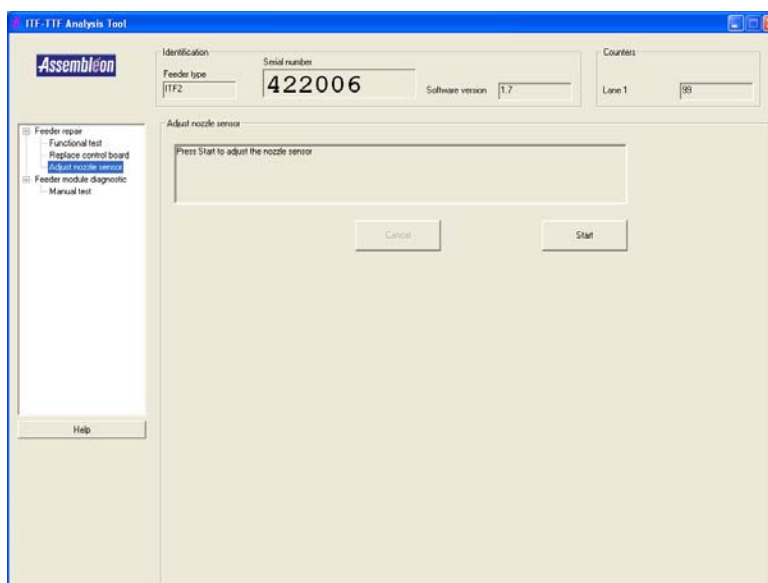
8. Check if the feeder is placed correctly



9. Switch on the 'DUT-power' of the tool. The switch becomes illuminated

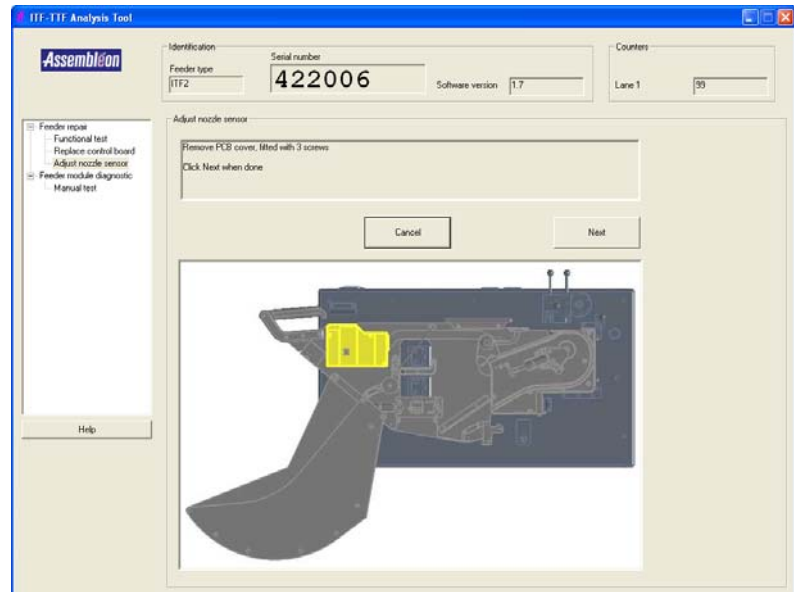


10. Select 'Adjust nozzle sensor'



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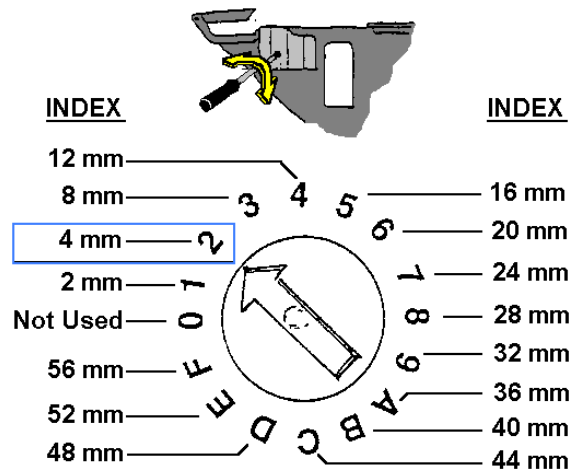
11. Follow the instructions on the screen



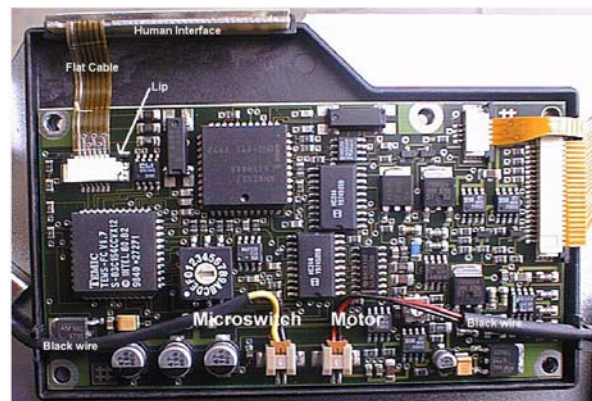
3.6.1.2 Sensor adjustment with optical filter tool

1. Preparation

- Put the hex switch on position 2 and place the feeder on a loading unit.



- Remove the housing of the controller board



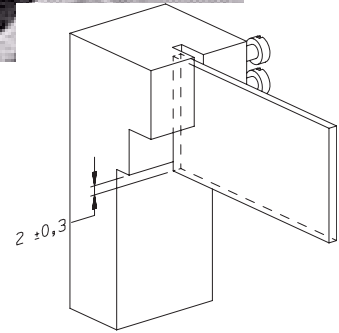
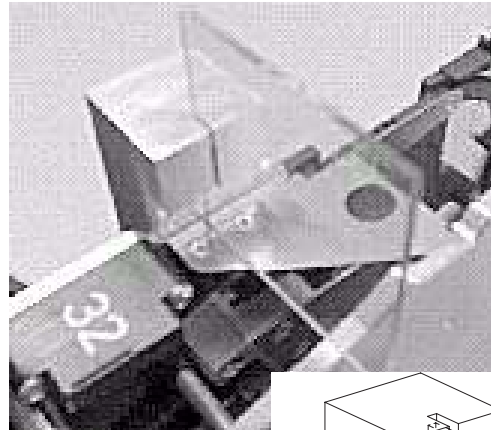
ITF-00021.fm

2. Adjusting with optical filter tool

- Place the Optical Filter Tool on the feeder. It is placed between the mounting screws of the peel off plate.

Note: If the glass does not rest on the base plate, the glass has to be repositioned. Loosening the two plastic clamping screws does this. Set the glass to the position.

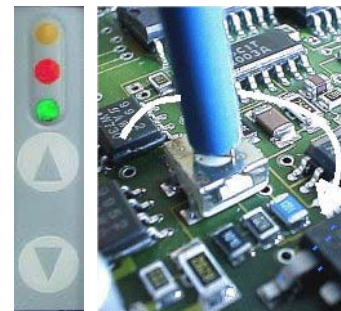
- Adjustment of the optical filter



- Turn the LED adjustment screw to its minimum (most counter clock-wise position).
- Check the Green LED on the Human Interface.
 - * If the LED is ON the adjustment is finished.
 - * If the LED is OFF, continue with next step.



- Slowly turn the LED adjustment screw clockwise. Continue until the Green LED on the human interface will go ON. At this moment the feeder will also index.
- Place the controller cover back and remove the optical filter tool from the feeder.



3.7 Calibrating ITF

3.7.1 When to calibrate an ITF

If one of the following questions is answered with yes, a feeder calibration is needed:

- Is the sprocket motor, sprocket wheel, sprocket sensor or controller board exchanged or adjusted?
- Has the feeder placed more than 6.000.000 components since last calibration?



Figure 18 Calibration tool

3.7.2 How to calibrate an ITF

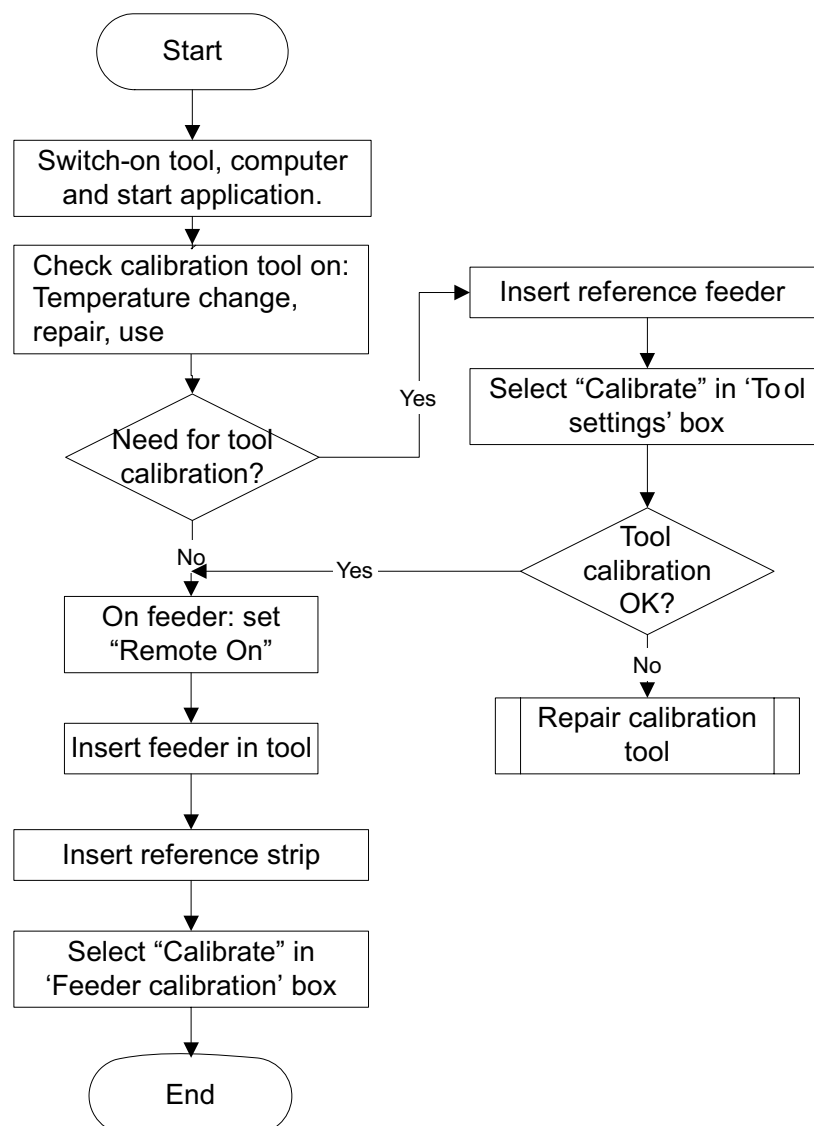
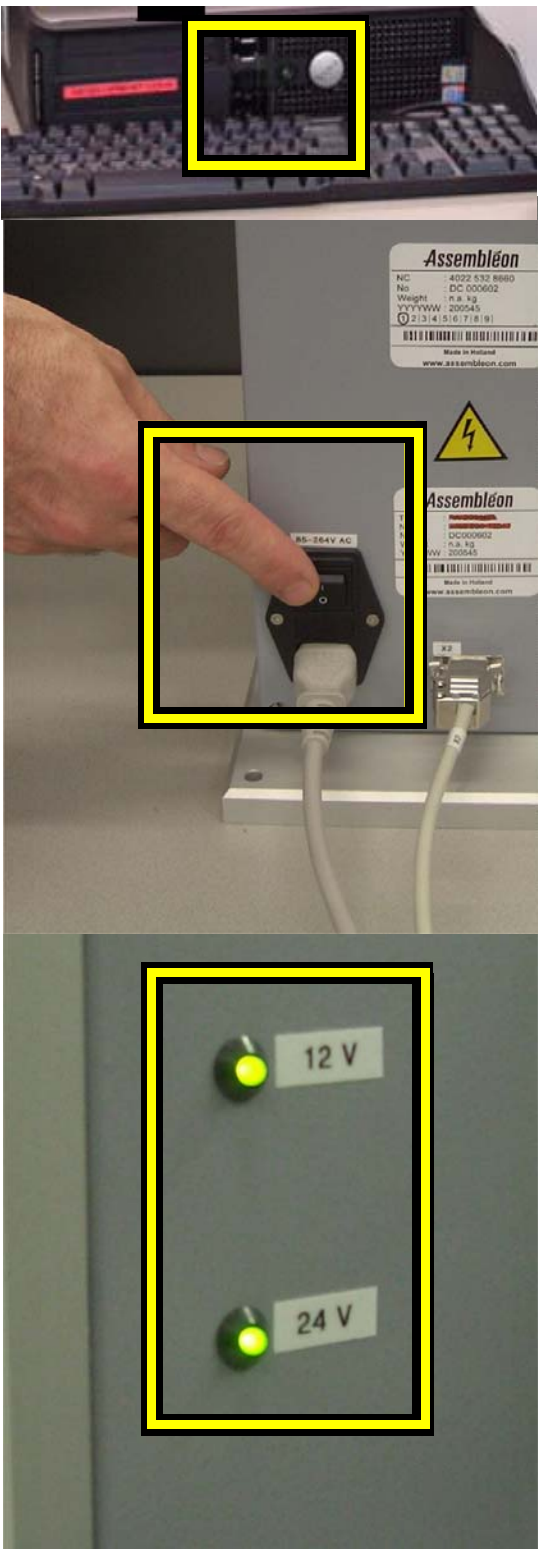
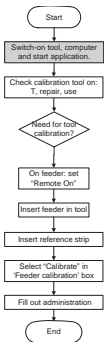
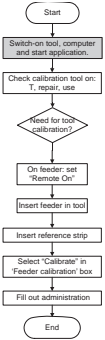
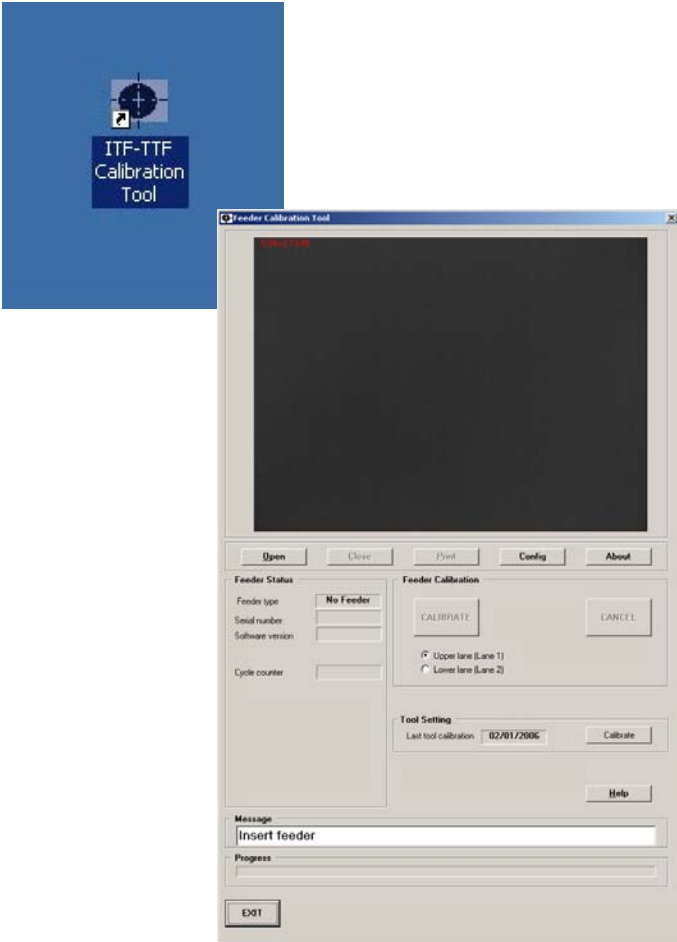
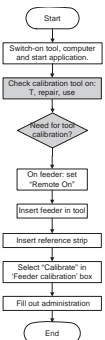
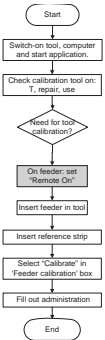
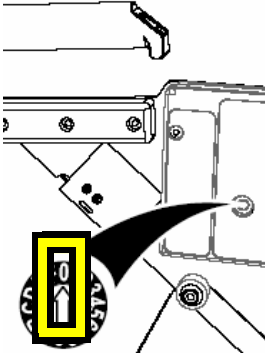


Figure 19 How to calibrate an ITF

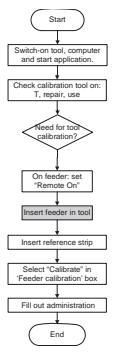
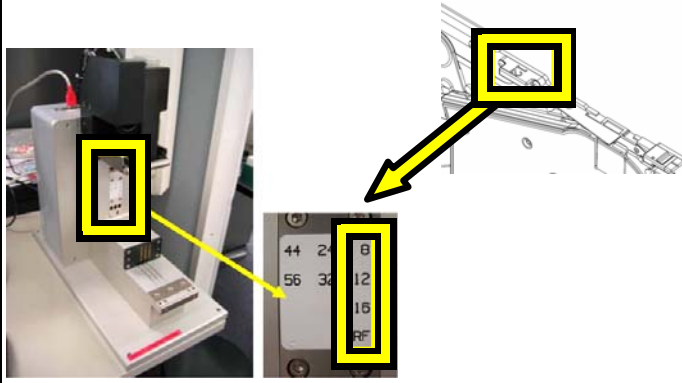
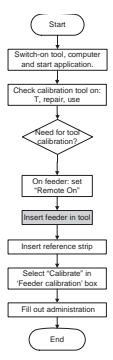
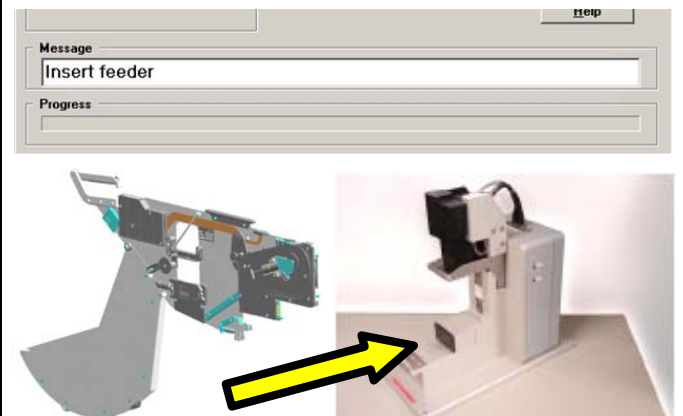
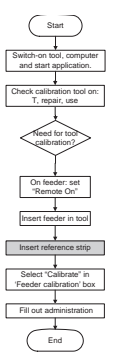
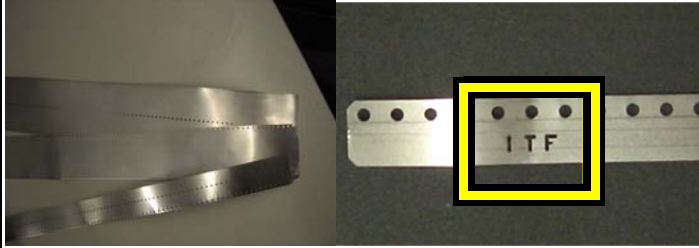
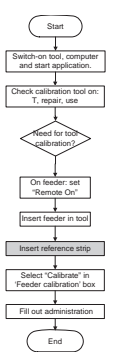
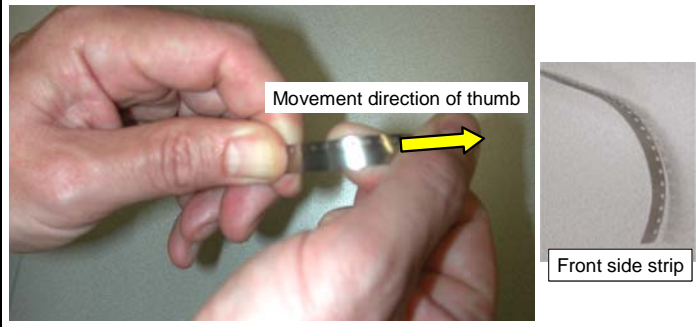
- Switch on computer and tool

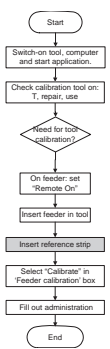
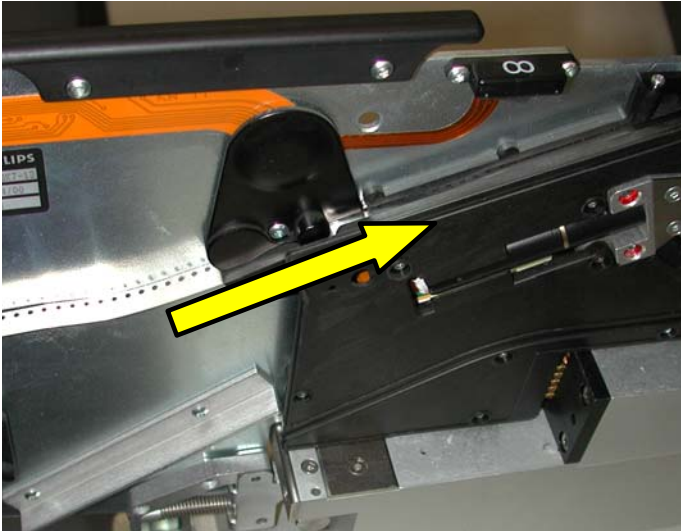
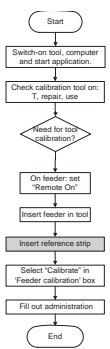
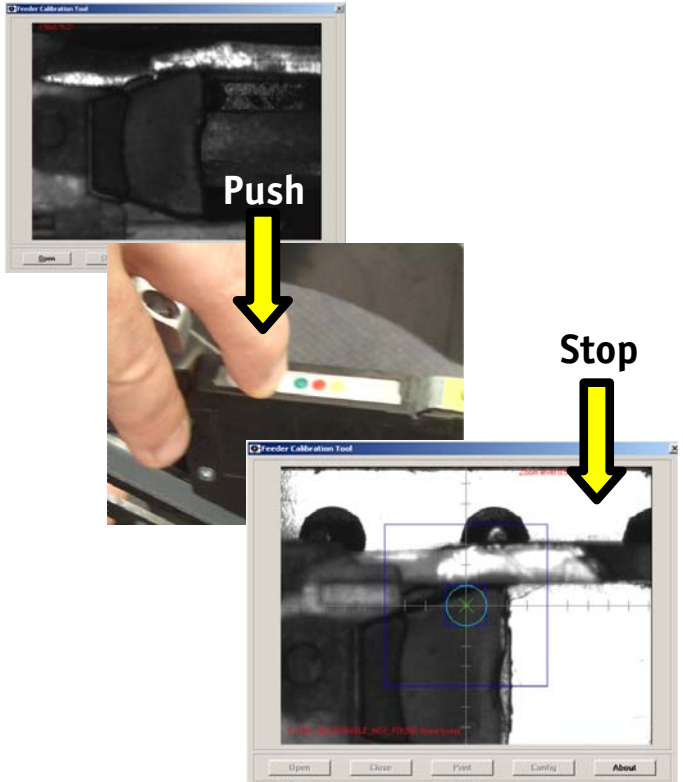


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 <pre> graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> Remote[On feeder: set "Remote On"] Remote --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> Calibrate[Select "Calibrate" in "Feeder calibration" box] Calibrate --> Admin[Fill out administration] Admin --> End([End]) </pre>	<ul style="list-style-type: none"> Double click "ITF-TTF tool" icon. 																			
 <pre> graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> Remote[On feeder: set "Remote On"] Remote --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> Calibrate[Select "Calibrate" in "Feeder calibration" box] Calibrate --> Admin[Fill out administration] Admin --> End([End]) </pre>	<ul style="list-style-type: none"> Check tool calibration 	<table border="1"> <thead> <tr> <th>What</th><th>Yes</th><th>No</th></tr> </thead> <tbody> <tr> <td>First time use?</td><td></td><td></td></tr> <tr> <td>Ambient T > 3°C after last calibration?</td><td></td><td></td></tr> <tr> <td>Change of camera(s)?</td><td></td><td></td></tr> <tr> <td>Crash or accident?</td><td></td><td></td></tr> <tr> <td>Need for tool calibration?</td><td></td><td></td></tr> </tbody> </table>	What	Yes	No	First time use?			Ambient T > 3°C after last calibration?			Change of camera(s)?			Crash or accident?			Need for tool calibration?		
What	Yes	No																		
First time use?																				
Ambient T > 3°C after last calibration?																				
Change of camera(s)?																				
Crash or accident?																				
Need for tool calibration?																				
 <pre> graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> Remote[On feeder: set "Remote On"] Remote --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> Calibrate[Select "Calibrate" in "Feeder calibration" box] Calibrate --> Admin[Fill out administration] Admin --> End([End]) </pre>	<ul style="list-style-type: none"> Set feeder to remote 																			

ITF-00022.fm

 <pre> graph TD Start([Start]) --> Switch[Switch-on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> SelectCal[Select "Calibrate" in "Feeder calibration" box] SelectCal --> FillOut[Fill out administration] FillOut --> End([End]) </pre>	<ul style="list-style-type: none"> Determine correct position 	
 <pre> graph TD Start([Start]) --> Switch[Switch-on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> SelectCal[Select "Calibrate" in "Feeder calibration" box] SelectCal --> FillOut[Fill out administration] FillOut --> End([End]) </pre>	<ul style="list-style-type: none"> Insert feeder in position 	
 <pre> graph TD Start([Start]) --> Switch[Switch-on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> SelectCal[Select "Calibrate" in "Feeder calibration" box] SelectCal --> FillOut[Fill out administration] FillOut --> End([End]) </pre>	<ul style="list-style-type: none"> Take correct reference strip 	
 <pre> graph TD Start([Start]) --> Switch[Switch-on tool, computer and start application.] Switch --> Check[Check calibration tool on: T, repair, use] Check --> Need{Need for tool calibration?} Need --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> InsertStrip[Insert reference strip] InsertStrip --> SelectCal[Select "Calibrate" in "Feeder calibration" box] SelectCal --> FillOut[Fill out administration] FillOut --> End([End]) </pre>	<ul style="list-style-type: none"> Pre-form the reference strip according to routing path along sprocket wheel 	

	<ul style="list-style-type: none"> • Insert reference strip 	
	<ul style="list-style-type: none"> • Forward reference strip until visible on screen 	

Start

Switch-on tool, computer and start application.

Check calibration tool on: T, repair, use

Need for tool calibration?

On feeder: set "Remote On"

Insert feeder in tool

Insert reference strip

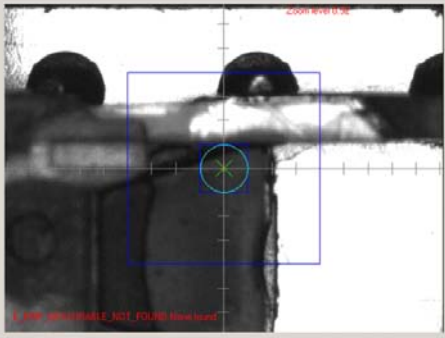
Select "Calibrate" in Feeder calibration box

Fill out administration

End

- Select "calibrate".
It is possible that the camera cannot find the first hole. This can be caused by the peel off plate (1) that is shifted in the most front position. Move the peel off plate backwards (2) to solve this problem.

Feeder Calibration Tool



Open Close Print Config About

Feeder Status

Feeder type: TTF R1.0

Serial number: 1005438

Software version: 3.4

Cycle counter: 2923

Tool Setting

Last tool calibration: 02/01/2006

Message: Insert reference strip in lower lane and press CALIBRA

Progress

EXIT

1

2

Start

Switch-on tool, computer and start application.

Check calibration tool on: T, repair, use

Need for tool calibration?

On feeder: set "Remote On"

Insert feeder in tool

Insert reference strip


Select "Calibrate" in Feeder calibration box

Fill out administration

End

- Follow calibration

Feeder Calibration Tool



Open Close Print Config About

Feeder Status

Feeder type: TTF R1.0

Serial number: 1005438

Software version: 3.4

Cycle counter: 2923


Tool Setting

Last tool calibration: 02/01/2006

Message: Calibrating: searching first hole

EXIT

Feeder Calibration Tool



Open Close Print Config About

Feeder Status

Feeder type: TTF R1.0

Serial number: 1005438

Software version: 3.4

Cycle counter: 2923

Tool Setting

Last tool calibration: 02/01/2006

Message: Calibrating: measuring reference strip

EXIT

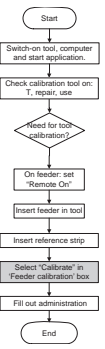
ITF-00022.fm

4022 591 91813
07.03 10-Oct-2007

Option Manual
Feeder Service Shop

81

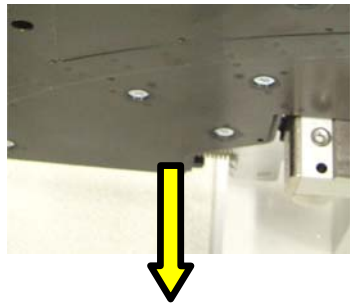
• Remove reference strip



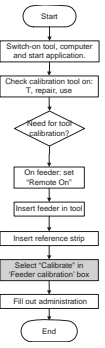
```

graph TD
    Start([Start]) --> Switch[Switch-on tool, computer and start application.]
    Switch --> Check[Check calibration tool on: T, repair, use]
    Check --> Need{Need for tool calibration?}
    Need --> OnFeeder[On feeder: set "Remote On"]
    OnFeeder --> InsertFeeder[Insert feeder in tool]
    InsertFeeder --> InsertStrip[Insert reference strip]
    InsertStrip --> SelectCal[Select "Calibrate" in Feeder calibration box]
    SelectCal --> FillOut[Fill out administration]
    FillOut --> End([End])
        
```

and

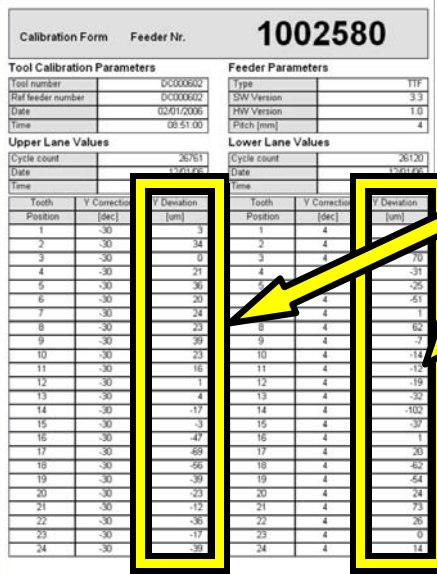


• Check calibration



```

graph TD
    Start([Start]) --> Switch[Switch-on tool, computer and start application.]
    Switch --> Check[Check calibration tool on: T, repair, use]
    Check --> Need{Need for tool calibration?}
    Need --> OnFeeder[On feeder: set "Remote On"]
    OnFeeder --> InsertFeeder[Insert feeder in tool]
    InsertFeeder --> InsertStrip[Insert reference strip]
    InsertStrip --> SelectCal[Select "Calibrate" in Feeder calibration box]
    SelectCal --> FillOut[Fill out administration]
    FillOut --> End([End])
        
```



Calibration Form Feeder Nr. 1002580

Tool Calibration Parameters

Tool number	00000002
Ref feeder number	00000002
Date	02/01/2006
Time	08:51:00

Feeder Parameters

Type	ITF
SW Version	3.3
HW Version	1.0
Pitch [mm]	4

Upper Lane Values

Tooth	Y Corrected	Y Deviation [µm]
1	-30	3
2	-30	34
3	-30	8
4	-30	21
5	-30	30
6	-30	20
7	-30	24
8	-30	23
9	-30	39
10	-30	23
11	-30	16
12	-30	1
13	-30	4
14	-30	-17
15	-30	-1
16	-30	-47
17	-30	-88
18	-30	-56
19	-30	-39
20	-30	-23
21	-30	-12
22	-30	-36
23	-30	-17
24	-30	-39

Lower Lane Values

Tooth	Y Corrected	Y Deviation [µm]
1	4	70
2	4	-31
3	4	-25
4	4	-61
5	4	11
6	4	-7
7	4	-14
8	4	-12
9	4	-19
10	4	-30
11	4	-102
12	4	3
13	4	20
14	4	-64
15	4	24
16	4	73
17	4	26
18	4	10
19	4	14

No RED = OK

3.8 Administration ITF

3.8.1 Administration procedure

An administration of the repair process can help to determine e.g.; cost of feeders, lifetime of feeders, order list for feeder spare parts, maintenance intervals, repeatedly of specific problems and more.

It is recommended to:

- Fill out an Administration sheet (See [3.8.2 Administration sheet](#) for an example. Delivered on the CD) after each step of the repair process.
- Store the sheet in e.g. a feeder service database.

Information from the ITF-TTF Analysis tool has to be filled out by hand. The tool does not keep any record of the tests.

Information from the ITF-TTF Calibration tool is presented as a 'Calibration form' on screen (See [3.8.3.1 Form example and explanation](#)) and stored in files in a text format (See [3.8.3.4 Store calibration data](#)).

3.8.2 Administration sheet

- Fill out this form after each step in the repair process.
- It can be used for administrative purposes.

Inspection	Assembleon feeder repair	ITF 2 Feeder
------------	--------------------------	--------------

1. Administration

Date		Feeder type	
Work order number		Serial number	
Repair number		Counter	
		Software version	

2. Visual inspection

No	Item	Sub item	Not OK				Not OK
1	Tape cover			12	Peel off unit	Front plate	
2	Screening plate			13		Closing mechanism	
3	Top guiding			14		Main shaft	
4	Safety pin			15		Pivot press unit	
5	Micro switch adjustment			16	Top plate		
6	Wire routing			17	Contact pins		
7	Reel holder	Screws all present		18	Position pins		
8		In tact		19	Remarks		
9		Wheels					
10	base plate	In tact					
11		Stick out screws					

3. Administration

Fill out the second half of '1.administration'

3. Functional test 1

5. Functional test 2

No	Item	Sub item	Not OK				Not OK
1	control board	EEPROM Parameters		1	control board	EEPROM Parameters	
2	power supply	Power supply current		2	power supply	Power supply current	
3	Index unit	Motor current forward		3	Index unit	Motor current forward	
4		Motor current backward		4		Motor current backward	
5		Find reference position		5		Find reference position	
6		Advance to position 23		6		Advance to position 23	
7		Find reference position		7		Find reference position	
8		Move to position 50		8		Move to position 50	
9	Peel off unit	Current forward (open)		9	Peel off unit	Current forward (open)	
10		Current backward (open)		10		Current backward (open)	
11		Current delta (open)		11		Current delta (open)	
12		Current forward (closed)		12		Current forward (closed)	
13		Current backward (closed)		13		Current backward (closed)	

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14	Nozzle detection	Simulate pick action		14	Nozzle detection	Simulate pick action	
15	Configuration switches	Rotary switch		15	Configuration switches	Rotary switch	
16	Select/busy line	Internal wiring		16	Select/busy line	Internal wiring	
17		External connection		17		External connection	
18	Human interface	LED's		18	Human interface	LED's	
19		Forward button		19		Forward button	
20		Backward button		20		Backward button	

4. Repair feeder

Repair feeder and fill out '6.Replaced parts' and '7. Adjustments'.

5. Repeat Functional test.

Fill out 'Test 2'

Please turn over

6. Replaced parts

Description:	Quantity:		Description:	Quantity:		Description:	Quantity:
Reel holder Assy			peel off motor			Seal	
Clamping unit assy			peel off plate			Shaft Holder	
Compr spring 0,5x5,5x33			Pivot Press unit			Spacer	
Compr. Spring 0,4x4x36,6			POS unit Bottom			Sprocket Wheel	
Contact Block Assy			Position Unit Top			Support Sheet 8mm	
Contact Pin GKS-913			Pre guiding Assy			Tape Cover	
Controller board			PSA Plate			Tape Guide	
Cover			PTFE Sleeve rnd 8			Top Guide Assy	
Cover unit			Receiver cover			Top foil Peel Cover	
Dist bush AL 5,5x1,1x7			Receiver Sensor			Top foil routing block	
Feeder Motor (index)			Retaining Plate			Top foil routing Shaft	
Guiding Bracket			Retaining wafer			Top foil shaft Bracket	
handle assy			Roller			Transmitter cover	
Handle Holder			Rotation Fixing Unit			Transmitter sensor	
Main Shaft			Screening Plate			User Interface	

7. Adjustments

Description:	Applicable:	
Load new software version		
Adjust index sensor		

8. Calibration

	OK	Not OK	
Calibration Successful			

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3.8.3 ITF Calibration form

After a calibration the calibration form is directly shown on screen.

Explanation of all fields in the form see [3.8.3.1 Form example and explanation](#)

To see a form from an other calibration see [3.8.3.2 Retrieve a calibration form](#)

To print the form see [3.8.3.3 Print a calibration form](#)

To store the form in e.g. a feeder service database see [3.8.3.4 Store calibration data](#)

3.8.3.1 Form example and explanation

Calibration Form		Feeder Nr. 408881	
Feeder Parameters			
Type	ITF2 - 8MM		
SW Version	1	1.7	
HW Version		2.1	
Pitch [mm]		4	
Cycle count		150	
Date		23/05/2007	
Time		13:19:29	
Tool Calibration Parameters			
Tool number		DC000603	
Ref feeder number	2	DC000603	
Date		23/05/2007	
Time		13:16:37	
Feeder Correction Values			
Sector	Value	Sector	Value
1	66	6	68
2	3	7	65
3	66	8	65
4	68	9	65
5	69	10	65
Sector	Value	Sector	Value
11	66	16	63
12	65	17	64
13	64	18	66
14	64	19	67
15	64	20	66
Feeder Measured Deviations			
Tooth number	Y [um]	Tooth number	Y [um]
1	-4	26	4
2	3	27	5
3	-9	28	8
4	4	29	-2
5	-15	30	41
6	0	31	5
7	-18	32	16
8	8	33	1
9	-7	34	13
10	-8	35	25
11	-7	36	15
12	6	37	28
13	-13	38	11
14	20	39	4
15	13	40	-8
16	-30	41	2
17	4	42	1
18	15	43	2
19	-2	44	9
20	8	45	-16
21	8	46	-16
22	2	47	-6
23	12	48	4
24	22	49	-9
25	11	50	7

Figure 20 Calibration form example

1. Feeder parameters:

- Type The type of ITF feeder. E.g. 8, 12, 16, 24, 32, 44, 52 mm. In case older calibration strips are used, the feeder will always's be an 8mm feeder.
- SW version. The software version present in the feeder.
- HW version The hardware version of the feeder controller board.
- Pitch. The pith stored in the feeder at time of the feeder calibration.
- Cycle count Number of cycles performed by the feeder before feeder calibration.
- Date Date of the feeder calibration.
- Time Time of the feeder calibration.

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2. Tool calibration parameters

- Tool number . . . DC number of the calibration tool.
- Ref feeder number DC number of the reference feeder used at the last calibration tool calibration.
- Date Date of the last calibration tool calibration.
- Time Time of the last calibration tool calibration.

3. Feeder correction values

- Sector Number of the sector.
The sprocket wheel is divided into 20 sectors. For each sector a correction value is calculated during calibration.
- Value Correction value in encoder pulses for the applicable sector.

4. Feeder measured deviations

- Tooth number . . Number of each tooth on the sprocket wheel.
- Y (μm) Deviation from the nominal position measured after calibration. If the deviation exceeds the reject limit, the field will turn 'Red'.
To see the reject limits;
 - Select 'Config' in the 'Feeder calibration tool'
 - In the 'Reject limit' box, select applicable feeder type.
 - The reject limit is shown in the 'Y (μm)' box.

3.8.3.2 Retrieve a calibration form

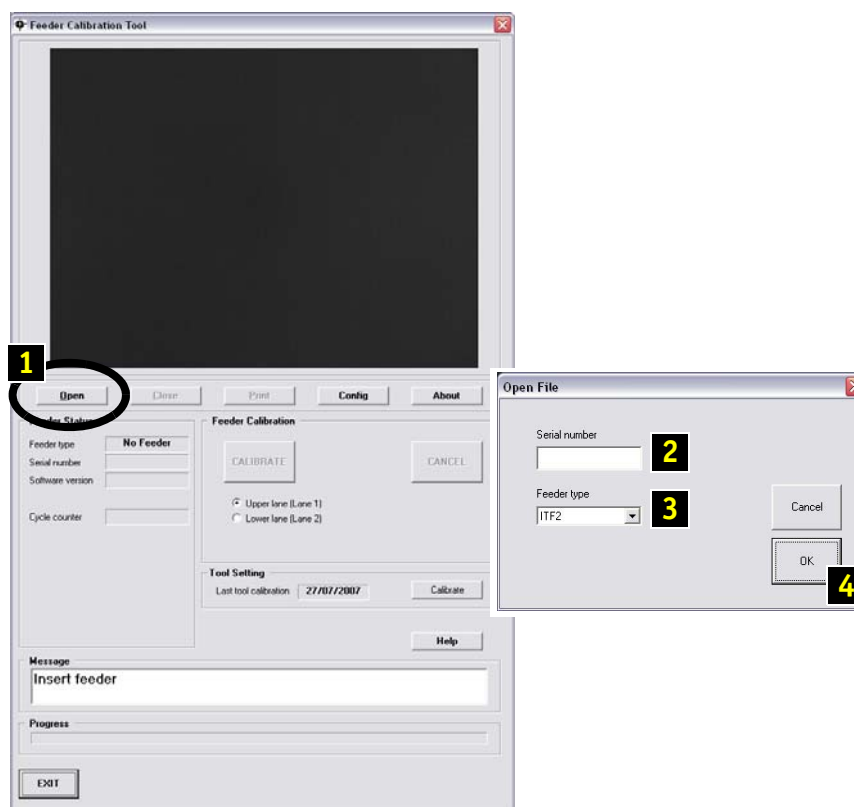


Figure 21 Feeder calibration tool

1. Select 'Open' in the 'Feeder calibration tool.
2. Type in the serial number in the feeder.
3. Select the applicable feeder type.
4. Select OK.

3.8.3.3 Print a calibration form

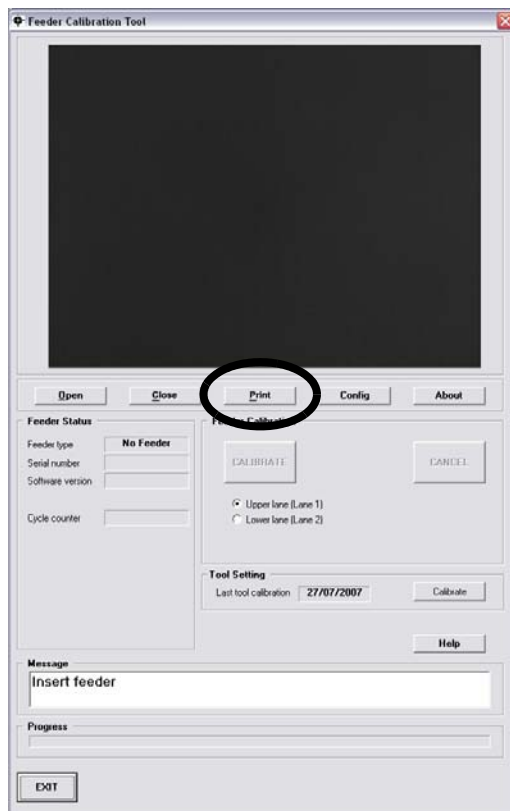


Figure 22 Feeder calibration tool

A calibration form must be visible on screen.

A printer must be connected to the calibration tool computer.

Select "Print" in the 'Feeder calibration tool'.

3.8.3.4 Store calibration data

Open the explorer on the calibration tool.

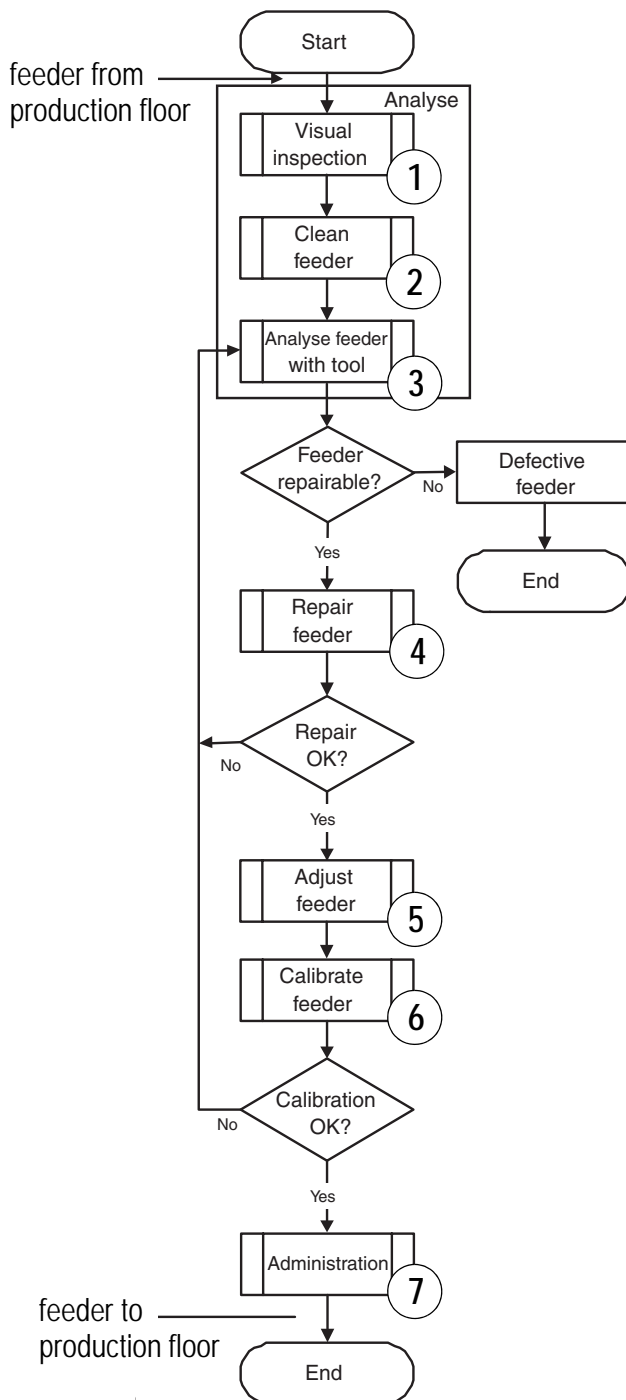
Go to C:\Calibration data\ITF2\.

Copy the file 'Feeder calibration .txt'.

Store the copied file to a USB-stick or network location for storage in e.g. a feeder service database.

CHAPTER 4 Service TTF

4.1 General service process



Reference:

1. [4.2 Visual inspection TTF](#)
2. [4.3 Cleaning instructions](#)
3. [4.4 Analysis TTF](#)
4. [4.5 Repair instructions](#)
5. [4.6 Adjustments and testing](#)
6. [4.7 Calibration TTF](#)

TTF-00004.fm

Figure 23

4.2 Visual inspection TTF

4.2.1 Quick reference sheet

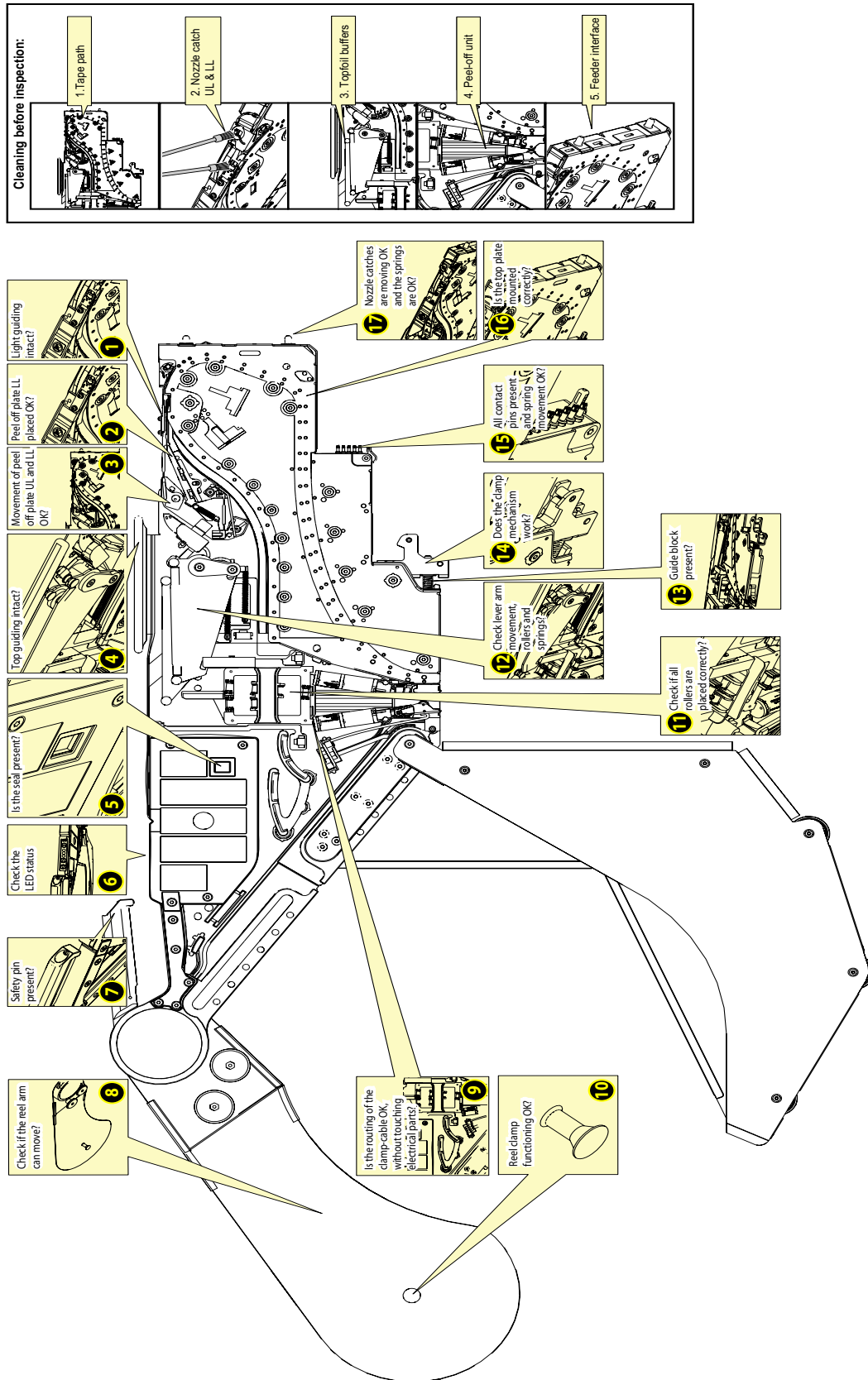


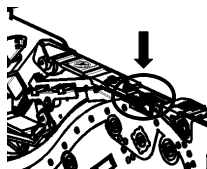


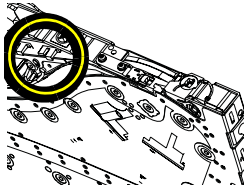
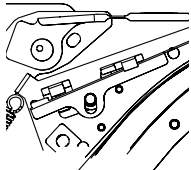

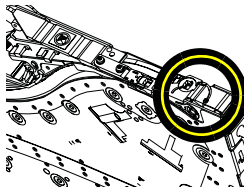
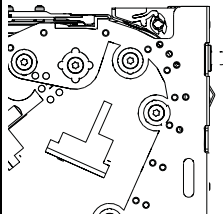




Figure 24

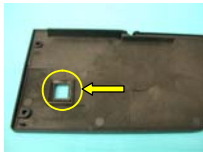
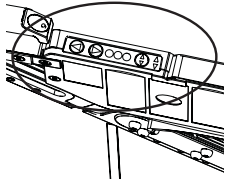
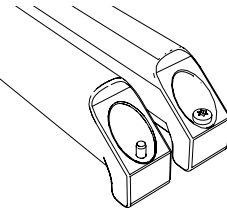
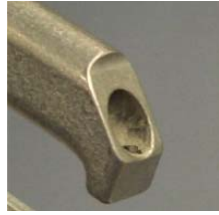
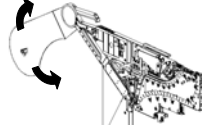
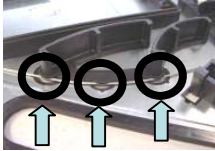
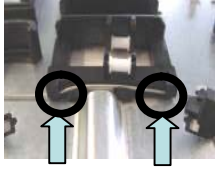




TTF-00005.fm

- The 'Check numbers' correspond with the numbers in the quick reference sheet.
- Administrate **all** items that are not ok on the sheet in section [4.8 Administration TTF](#) .
- If replacement is done directly, also administrate the replace action in the sheet in section [4.8 Administration TTF](#) .




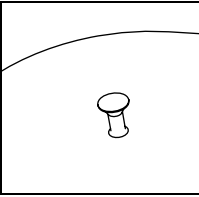
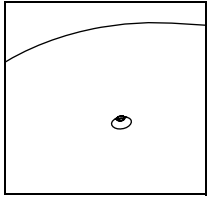
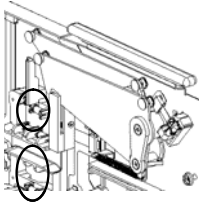


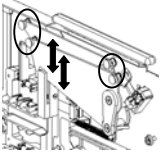



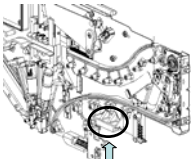
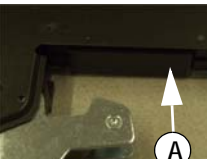

4.2.2 Visual inspection

No.	Part	Action	Check	OK	Not OK	Instruction
1	Light-guide Lower nozzle catch	Check if the Light-guide of the lower nozzle catch	Check if it's not broken			Replace: 4.5.12.7 Nozzle catch lower lane, light guide replacement
2	peel off plate LL	Check peel off plate LL.	Check if peel off plate LL is not clamped between base plate and Top Plate 			Put Peel off plate in correct position. If damaged, replace lower nozzle catch: 4.5.12.6 Nozzle catch lower lane, replacement
3a	Peel off plate LL	Sample test: Check whether the peel off plate can be set to the front position	Check for correct mounting of the LL peel off plate 			Adjust or replace lower nozzle catch: 4.5.12.6 Nozzle catch lower lane, replacement
3b	Peel off plate UL	Sample test: Check whether the peel off plate can be set to the front position with Adjustment Key Ncul	Check for correct mounting of the UL peel off plate 			Adjust or replace upper nozzle catch: § 4.5.12.5 Nozzle catch upper lane, replacement
4	Top guide	Check the status of the Top guide	Not broken			If damaged, use sandpaper to smoothen the top guide. If this does not help the feeder is not repairable.


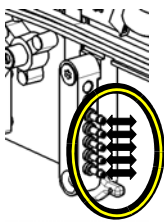


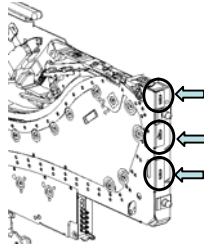



TTF-00005.fm

No.	Part	Action	Check	OK	Not OK	Instruction
5	Seal	Check presence of seal	Check if the seal between the controller cover and dip switches is present			Replace seal
6	LEDs	Check LED status, see 4.2.3				
7	Safety pin	Check presence and height.	<ul style="list-style-type: none"> Height of safety pin is 2 +/- 0.5 mm 			4.5.11 Clamping lever assembly, replacement
8	Reel arm	Check movement	Move reel arm up& down Check reel arm for bending The arm must stay up!			4.5.8 Reel holder assembly, replacement
9	Clamp cable	Examine routing cable	Check if cable routing is correctly without touching electrical parts/wires	  	  	Correct routing

TTF-00005.fm

No.	Part	Action	Check	OK	Not OK	Instruction
10	Reel clamp	Old version: open and close the reel clamp Rotate the reel clamp	The clamp must be able to open and close. The clamp must be able to rotate. The black inner mechanism is not damaged or sticking out of the housing.	 		4.5.8 Reel holder assembly, replacement
		New version: check presence				4.5.8 Reel holder assembly, replacement
11	Top foil guiding roller	Check if rollers are pushed in correctly	Push the white roller. Roller should be "clicked"-in 			4.5.10 Top foil guiding, parts replacement
12	Top foil buffer lever arm	Check if lever arm movement lever rolls and springs. 	a-Check movement of the Lever arm (should be in upper position when not used) b-Check presence of the Lever rollers. c-Check Spring condition d-Check if the guide blocks are free from components		 	§ 4.5.10 Top foil guiding, parts replacement
13	Guide block	Check the guide block (A) presence	Check if guide block is present 			4.5.12.4 Guide block, replacement

TTF-00005.fm

No.	Part	Action	Check	OK	Not OK	Instruction
14	Clamping unit	Check proper and smoothly working	<ul style="list-style-type: none"> • Check clamping unit • Check cable routing 			4.5.11.2 Clamping unit, replacement
15	Contact Pins	Press in contact pins	<ul style="list-style-type: none"> • All 5 present • No damages • Spring movement for each pin ok? 			4.5.12.1 Contact pins, replacement
16	Side plate	Examine front side of side plate	<p>Check if side plate is correctly fixed at the front side of the feeder and if all screws are placed and not exceeding the top plate or the other side</p> 		 	Bend back the front-side of the plate or replace the side plate and tighten all screws.

TTF-00005.fm

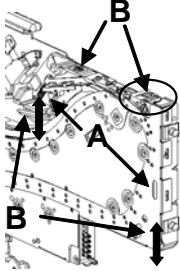
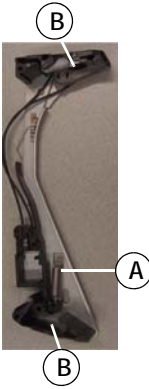

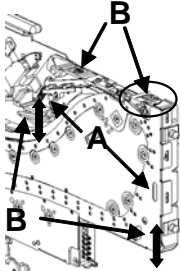


No.	Part	Action	Check	OK	Not OK	Instruction
17a	Nozzle catch UL	Push up the nozzle catch and check the Springs (A) and Spring plates (B)	Nozzle catch must return completely to lower position (check by pressing it) 			If the spring (A) is damaged, replace the spring with the help of hook or a bend paperclip. See 4.5.12.5 Nozzle catch upper lane, replacement If the spring plate(B) is damaged replace Nozzle Catch. See 4.5.12.5 Nozzle catch upper lane, replacement
17b	Nozzle catch LL	Push up the nozzle catch and check the Springs (A) and Spring plates (B)	Nozzle catch must return completely to lower position (check by pressing it) 			If the spring (A) is damaged, replace the spring with the help of hook or a bend paperclip. If the spring plate(B) is damaged replace Nozzle Catch. See 4.5.12.6 Nozzle catch lower lane, replacement

Figure 25

TTF-00005.fm

4.2.3 LED signals on ITF and TTF

The LED signals are useful for operators and for technicians.

The LED signals are generally the same for ITF and TTF.

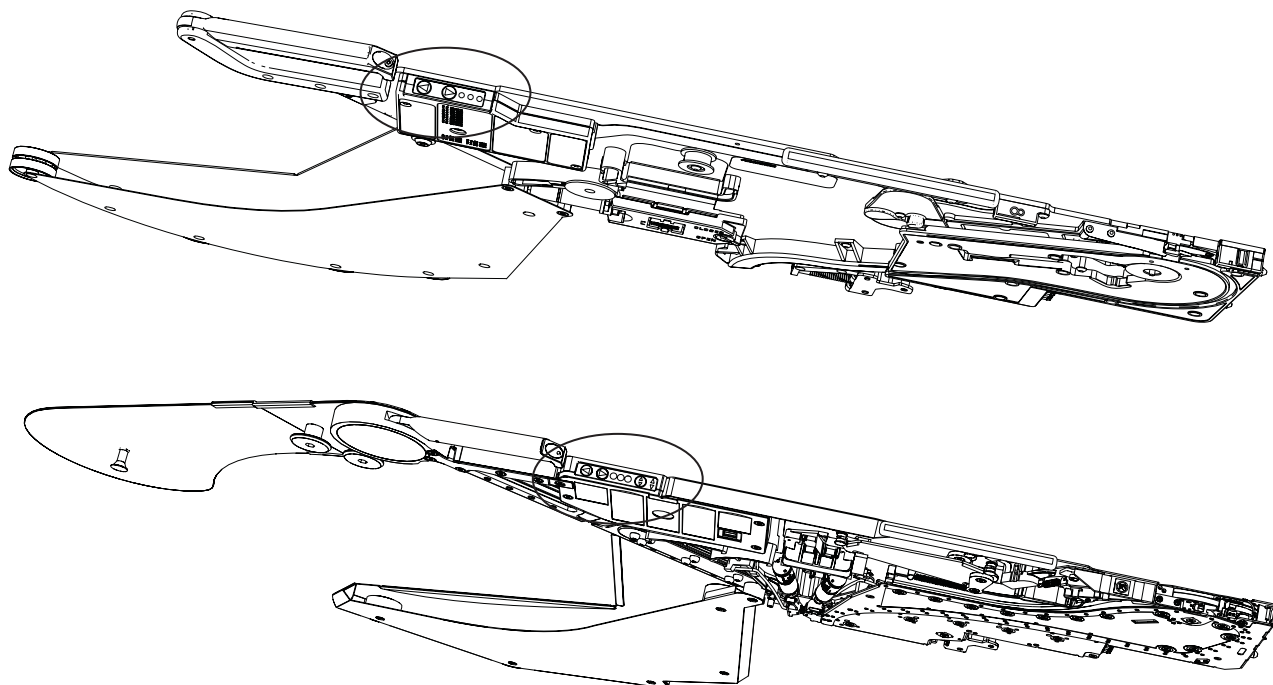


Figure 26 LEDs on ITF (above) and TTF (below)

TTF-00005.fm

What is the problem?	When does it occur	How to resolve
Communication error	***** Red LED blinking 7 times.	
Message in box of the feeder is full. Short circuit between pin 2 (CAN Low) and 3 (CAN High). The feeder has sent a message to the trolley controller board, but has not received an acknowledge message back.	Only in combination with SVS-pro. SVS-pro tries to write in the feeder, but the feeder in box is full.	<ul style="list-style-type: none"> Remove feeder from machine. Check trolley controller board. Check contact pins from feeder. Check flat cable. Check controller board.
Memory corrupt	***** Red LED blinking 5 times	
The feeder memory is corrupt.	Only in combination with SVS-pro During tape loading. When operator doesn't wait for the beep of the scanner before releasing the feeder. While SVS-pro is writing to the feeder, the feeder was disconnected from the loading unit.	<ul style="list-style-type: none"> Use the analysis tool (if available) to reset the feeder. If the analysis tool is not available, send the feeder to the feeder repair shop.
Index time-out error	**** Red LED blinking 4 times.	
Next index position is not reached within a specified time.	Tape stuck or blocked Dirty sprocket wheel or sensor Defective sprocket sensor	<ul style="list-style-type: none"> Press forward or backward button Check tape path for obstructions Clean sprocket wheel Check functionality sprocket sensor, using the analysis tool (if available)
Nozzle sensor error	** Red LED blinking 2 times.	
Too much light received by nozzle sensor receiver. A nozzle is detected directly after the feeder is powered up.	External light source interference. Nozzle sensor not functioning well. Top foil blocks the nozzle sensor during power up.	<ul style="list-style-type: none"> Remove external light source (if possible). Clean nozzle sensors. Re-adjust nozzle sensor (ITF-2 only).
Peel off problem	* Red LED blinking 1 time	
Peel off problem Top foil buffer problem	Top foil broken Top foil not guided through peel off unit	<ul style="list-style-type: none"> Re-load top foil. Check peel off unit. Check buffer (incl. sensor).
Transporting top foil backward problem	● Red LED is constantly on	
Not ready to transport the top foil backward.	Pushing the backward button while the buffer-full sensor is not activated	<ul style="list-style-type: none"> Check peel off unit and replace if necessary. Check buffer and take necessary actions.
Low stock warning	☀ Yellow LED is blinking	
Stock is low. Stock level is entered while loading a new reel with use of SVS-pro.	Only in combination with SVS-pro. When the stock level has reached a pre-defined 'stock low' level.	<ul style="list-style-type: none"> Load new reel using SVS-pro. Place the feeder on SVS-pro loading unit and select the 'empty feeder' button on SVS-pro.
Zero stock error	● Yellow LED is constantly on	
Stock is zero (no components left on feeder).	Only in combination with SVS-pro. When stock level is zero.	<ul style="list-style-type: none"> Load new reel via SVS-pro. Place the feeder on SVS-pro loading unit and select the 'empty feeder' button on SVS-pro.
Feeder is OK	✱ Green LED is blinking	
Feeder is OK.	Feeder is set to "Remote ON" mode. Feeder is not initialized by SVS-pro.	<ul style="list-style-type: none">
Feeder is OK	● Green LED is constantly on	
Feeder is OK.		<ul style="list-style-type: none">

TTF-00005.fm

4.3 Cleaning instructions



SENSITIVE EQUIPMENT
Wrong handling can cause damage.
Handle with care.



NOTE: Do not use isopropanol or other chemicals for cleaning the TTF.

1. Required Equipment

- Vacuum cleaner
- Fibre free tissue
- Brush
- A pair of scissors
- Pair of tweezers

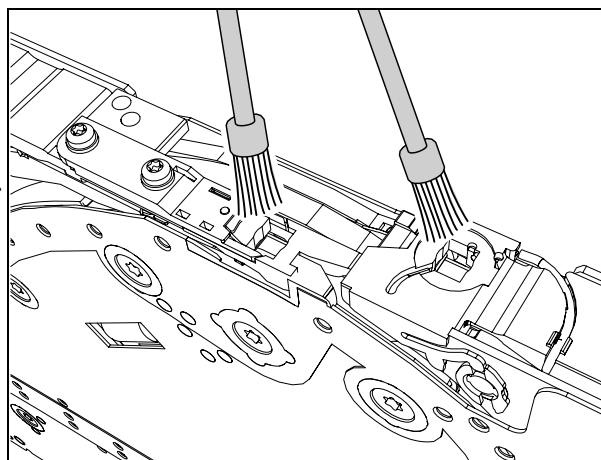


2. Tape path, cleaning

- Tool used: vacuum cleaner and/or hard brush.
- Clean the tape path.
- Turn feeder upside down to remove components from the lanes.

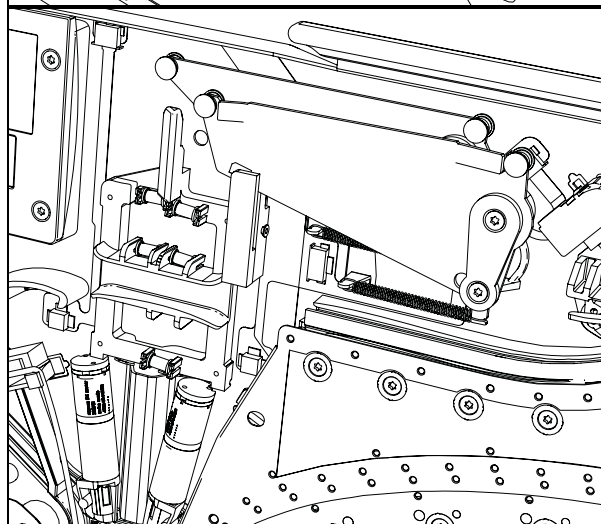
3. Nozzle catch assy, cleaning

- Tool used: vacuum cleaner and/or soft brush.
- Clean the upper and lower nozzle catch.
- Clean also under the upperlane nozzle catch.
- Check and clean the peel-off plate with a brush.



4. Top foil guiding rollers and buffer rollers, cleaning

- Tool used: fiber free tissue.
- Clean the guiding rollers holder and buffer rollers.

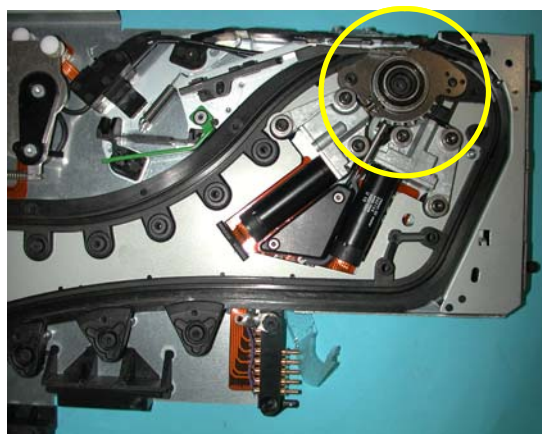


TTF-00006.fm

5. Sprocket wheel assembly, sprocket teeth and sprocket sensor, cleaning

Note: Do not use compressed air. This will only blow the dirt into the feeder and will end up on other places like, for instance, the sprocket sensor.

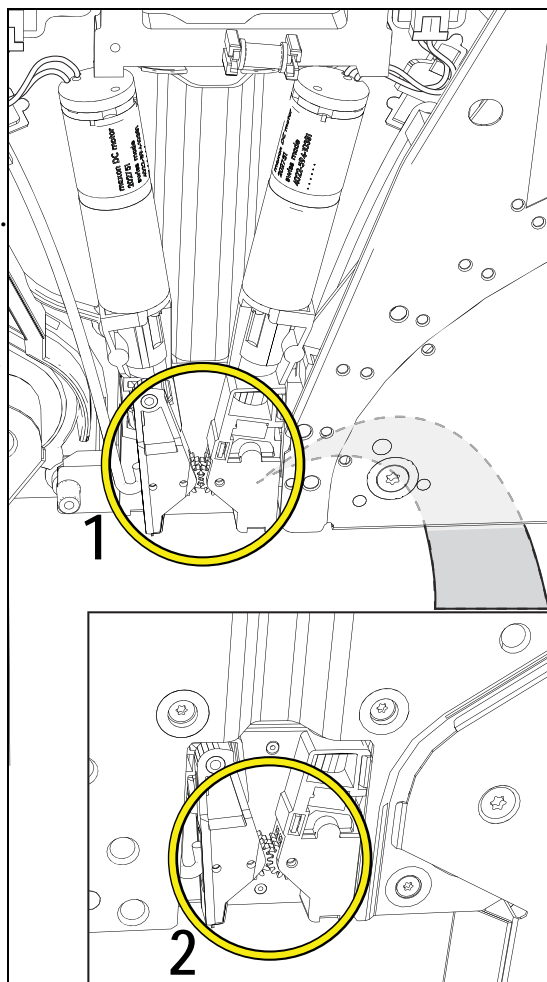
- Remove top cover and middle plate (according the instructions in [4.5.13.3 Middle plate, replacement](#)) to get access to the sprocket units.
- Tool used: vacuum cleaner and brush.
- If the sprocket wheel is contaminated with dust cleaning is required. The dust must be vacuumed and the teeth of the sprocket wheel must be cleaned with a brush.
- Remove any tape from the feeder.
- Press the index button and rotate at least one full round of the sprocket wheel while cleaning the sprocket wheel teeth. Repeat for both lanes.



6. Topfoil motor assy, cleaning

Tool used: brush, pair of tweezers

- Remove the top foil.
- Clean both sides of the peel-off wheels (1 and 2).
 1. Use a cloth to remove oil.
 2. Use a brush for other contamination/components.
- Depending on the quality of foil and the quality (or processing) of glue, small threads can exist on the foils. It is possible that the threads (in small or large quantities) can end up in-between the peel wheels. A pair of tweezers can remove these threads. The amount is very dependent on overall tape/foil quality.



4.4 Analysis TTF

4.4.1 Work flow

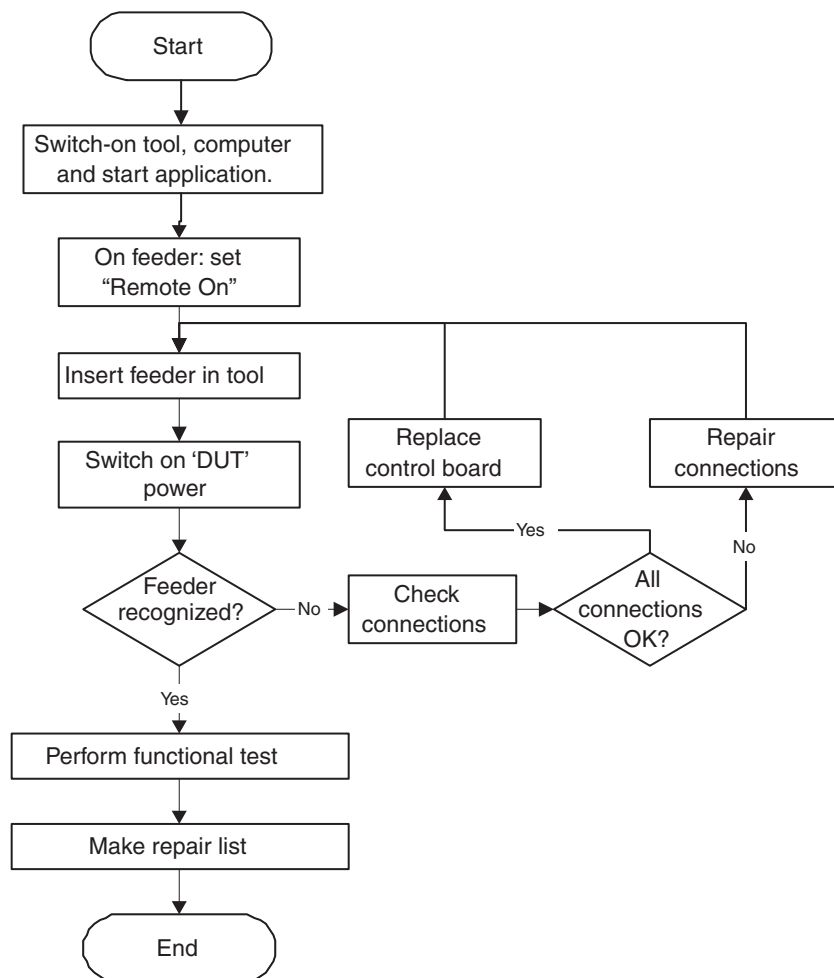
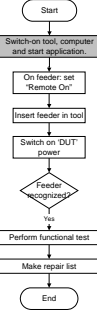
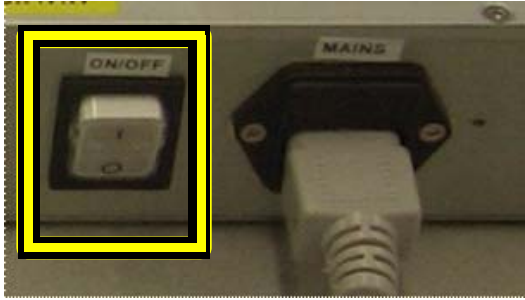
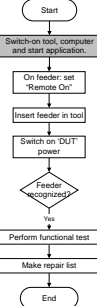

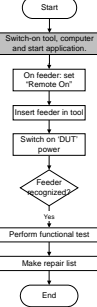
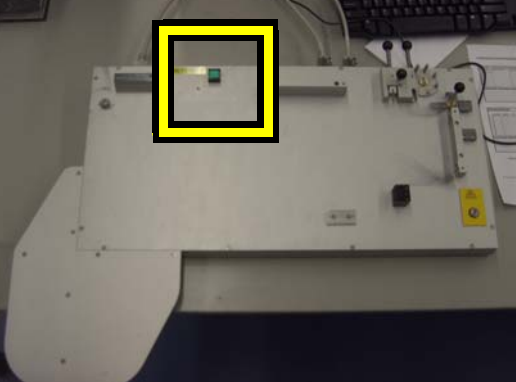
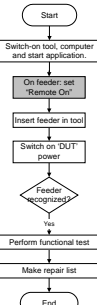
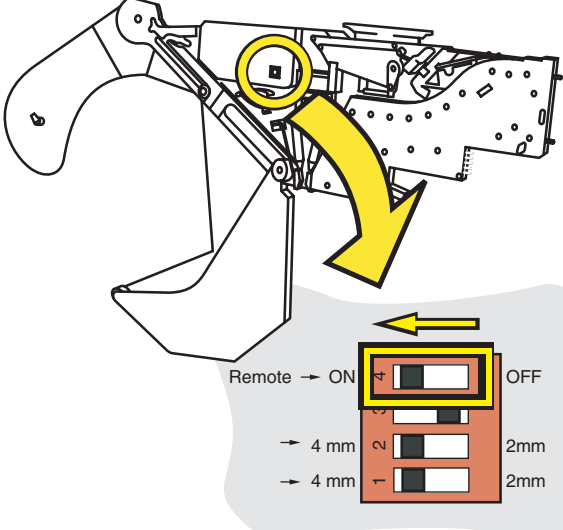


Figure 27

	<p>•Switch on the computer</p>	
--	--------------------------------	--

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TTF-00007.fm

	<ul style="list-style-type: none"> •Switch on the 'Mains switch" on the tool 	
	<ul style="list-style-type: none"> •Start up the program with the icon 'ITF-TTF Analysis tool' 	
	<ul style="list-style-type: none"> •Make sure the 'DUT' Power of the tool is switched off. (The switch is NOT illuminated.) 	
	<ul style="list-style-type: none"> •Set the remote switch to "ON" on the TTF 	

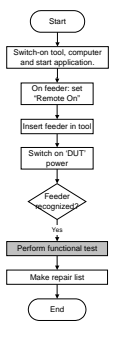
	<ul style="list-style-type: none">•Place the TTF to be analysed in the 'tool-table'																																																																																																																																																									
	<ul style="list-style-type: none">•Check if the feeder is placed correctly																																																																																																																																																									
	<ul style="list-style-type: none">•Switch on the 'DUT-power' of the tool. The switch becomes illuminated.																																																																																																																																																									
	<ul style="list-style-type: none">•Check if feeder 'Type' and 'Number' appears. If not, look in the table in 4.5.1 Feeder repair actions to take from the analysing tool what action to take.	<table><tr><th colspan="2">Identification</th><th>Serial number</th><th>Cycles</th></tr><tr><td>Feeder type</td><td>TTF files</td><td>1013948</td><td>Software version: [V1.90] Lane 1 (upper): [154] Lane 2 (lower): [302]</td></tr></table> <table><tr><th>Id</th><th>Module</th><th>Action</th><th>Unit</th><th>Expected result</th><th>Status</th><th>Upper limit</th><th>Lower limit</th></tr><tr><td>1</td><td>Control board</td><td>EEPROM parameters</td><td></td><td>Set to default</td><td>Not done</td><td></td><td></td></tr><tr><td>2</td><td>Power supply</td><td>Power supply current</td><td>mA</td><td>10-100</td><td>Not done</td><td></td><td></td></tr><tr><td>3</td><td>Select/busy line</td><td>Internal wiring</td><td></td><td>Select follows busy</td><td>Not done</td><td></td><td></td></tr><tr><td>4</td><td></td><td>External connection</td><td></td><td>Select line detected</td><td>Not done</td><td></td><td></td></tr><tr><td>5</td><td></td><td>Backward button</td><td></td><td>Button detected</td><td>Not done</td><td></td><td></td></tr><tr><td>6</td><td>Human interface</td><td>Forward button</td><td></td><td>Button detected</td><td>Not done</td><td></td><td></td></tr><tr><td>7</td><td></td><td>Lens button</td><td></td><td>Button detected</td><td>Not done</td><td></td><td></td></tr><tr><td>8</td><td></td><td>LEDs</td><td></td><td>Acting as walking light</td><td>Not done</td><td></td><td></td></tr><tr><td>9</td><td></td><td>Remote switch</td><td></td><td>Both on/off detected</td><td>Not done</td><td></td><td></td></tr><tr><td>10</td><td>Configuration switches</td><td>Local mode pitch switch</td><td></td><td>All pitches detected</td><td>Not done</td><td></td><td></td></tr><tr><td>11</td><td>Piezo motor</td><td>Motor current</td><td>mA</td><td>23-120</td><td>Not done</td><td></td><td></td></tr><tr><td>12</td><td></td><td>Buffer sensors</td><td></td><td>Motor on/off when lever moves</td><td>Not done</td><td></td><td></td></tr><tr><td>13</td><td>Nozzle detection</td><td>LED current</td><td>mA</td><td>0-40</td><td>Not done</td><td></td><td></td></tr><tr><td>14</td><td></td><td>Motor current forward</td><td>mA</td><td>20-130</td><td>Not done</td><td></td><td></td></tr><tr><td>15</td><td>Tooth sequence</td><td>Motor current</td><td>mA</td><td>0-2</td><td>Not done</td><td></td><td></td></tr><tr><td>16</td><td>Index unit</td><td>Min/max tooth pitch</td><td></td><td>445-470</td><td>Not done</td><td></td><td></td></tr><tr><td>17</td><td></td><td>Min/max tooth width</td><td></td><td>125-225</td><td>Not done</td><td></td><td></td></tr></table>	Identification		Serial number	Cycles	Feeder type	TTF files	1013948	Software version: [V1.90] Lane 1 (upper): [154] Lane 2 (lower): [302]	Id	Module	Action	Unit	Expected result	Status	Upper limit	Lower limit	1	Control board	EEPROM parameters		Set to default	Not done			2	Power supply	Power supply current	mA	10-100	Not done			3	Select/busy line	Internal wiring		Select follows busy	Not done			4		External connection		Select line detected	Not done			5		Backward button		Button detected	Not done			6	Human interface	Forward button		Button detected	Not done			7		Lens button		Button detected	Not done			8		LEDs		Acting as walking light	Not done			9		Remote switch		Both on/off detected	Not done			10	Configuration switches	Local mode pitch switch		All pitches detected	Not done			11	Piezo motor	Motor current	mA	23-120	Not done			12		Buffer sensors		Motor on/off when lever moves	Not done			13	Nozzle detection	LED current	mA	0-40	Not done			14		Motor current forward	mA	20-130	Not done			15	Tooth sequence	Motor current	mA	0-2	Not done			16	Index unit	Min/max tooth pitch		445-470	Not done			17		Min/max tooth width		125-225	Not done		
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<pre> graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Remote[On feeder: set 'Remote On'] Remote --> Insert[Insert feeder in tool] Insert --> DUT[Switch on 'DUT' power] DUT --> Feeder{Feeder recognized?} Feeder -- Yes --> Test[Perform functional test] Feeder -- No --> End([End]) Test --> Repair[Make repair list] Repair --> End </pre>	<p>•Select 'Start'</p>	
<pre> graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Remote[On feeder: set 'Remote On'] Remote --> Insert[Insert feeder in tool] Insert --> DUT[Switch on 'DUT' power] DUT --> Feeder{Feeder recognized?} Feeder -- Yes --> Test[Perform functional test] Feeder -- No --> End([End]) Test --> Repair[Make repair list] Repair --> End </pre>	<p>•Follow tests on screen</p>	
<pre> graph TD Start([Start]) --> Switch[Switch on tool, computer and start application.] Switch --> Remote[On feeder: set 'Remote On'] Remote --> Insert[Insert feeder in tool] Insert --> DUT[Switch on 'DUT' power] DUT --> Feeder{Feeder recognized?} Feeder -- Yes --> Test[Perform functional test] Feeder -- No --> End([End]) Test --> Repair[Make repair list] Repair --> End </pre>	<p>•Test 'Waiting' for operating action</p>	

TTF-00007.fm

	<ul style="list-style-type: none"> •Human interface buttons •Push the applicable buttons •If the tool stays in 'waiting' mode select 'waiting' and select 'reject' 	
	<ul style="list-style-type: none"> •Human interface LED's •Select 'Inspect' •If OK: select 'accept' •If NOT OK: select 'Reject' 	
	<ul style="list-style-type: none"> •Set switch in other position and back •Wait for 'BEEP', set next switch •Repeat until all OK •If NOT OK select 'waiting' and 'reject' 	

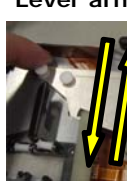


```


graph TD
    Start([Start]) --> Switch[Switch on tool, computer and start application.]
    Switch --> OnFeeder[On feeder: set 'Remote On']
    OnFeeder --> Insert[Insert feeder in tool]
    Insert --> SwitchOut[Switch on 'OUT' power]
    SwitchOut --> FeederRecognized{Feeder recognized?}
    FeederRecognized -- No --> End([End])
    FeederRecognized -- Yes --> PerformTest[Perform functional test]
    PerformTest --> MakeRepair[Make repair list]
    MakeRepair --> End
    
```

- Move lever arm 1 down (wait one second)
- Release lever arm
- Repeat 1x
- If NOT OK select 'waiting' and 'reject'
- Same for lever arm 2

Lever arm 1



Lever arm 2



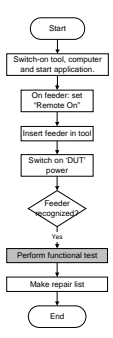
OK

Motor on/off when lever moved

Not OK: Select

Test	Upper lane	Lower lane
Lever moved	Ok	Waiting
0-40	11	61
20-135	69	61
0-23	Not done	Not done
445-470	Not done	Not done
125-225	Not done	Not done

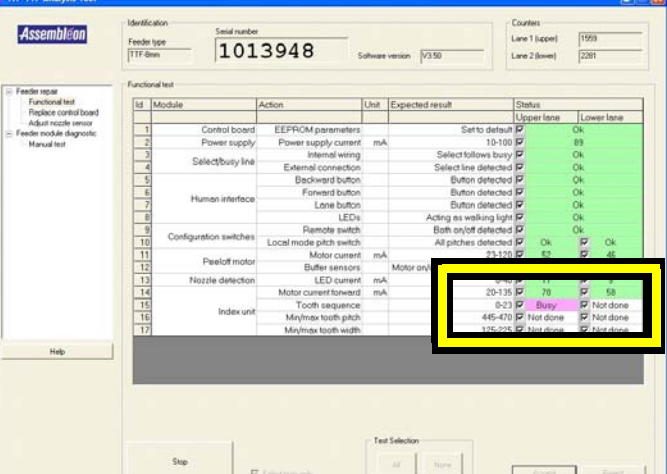
Reject



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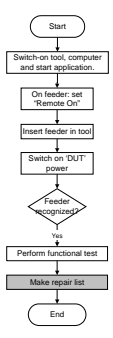
graph TD
    Start([Start]) --> Switch[Switch on tool, computer and start application.]
    Switch --> OnFeeder[On feeder: set 'Remote On']
    OnFeeder --> Insert[Insert feeder in tool]
    Insert --> SwitchOut[Switch on 'OUT' power]
    SwitchOut --> FeederRecognized{Feeder recognized?}
    FeederRecognized -- No --> End([End])
    FeederRecognized -- Yes --> PerformTest[Perform functional test]
    PerformTest --> MakeRepair[Make repair list]
    MakeRepair --> End
    
```

- Follow tests on screen



Identification: Serial number 1013948, Software version V3.50, Counts: Lane 1 (upper) 1959, Lane 2 (lower) 2281

Id	Module	Action	Unit	Expected result	Status	Upper lane	Lower lane
1	Control board	EEPROM parameters		Set to default	Ok		
2	Power supply	Power supply current	mA	10-100	Ok	89	
3	Select/busy line	Internal wiring		Select follows busy	Ok		
4		External connection		Select line detected	Ok		
5		Backward button		Button detected	Ok		
6	Human interface	Forward button		Button detected	Ok		
7		Lane button		Button detected	Ok		
8		LEDs		Acting as walking light	Ok		
9		Remote switch		Both on/off detected	Ok		
10	Configuration switches	Local mode pitch switch		All pitches detected	Ok		
11	Peeloff motor	Motor current	mA	23-120	Ok	48	48
12		Buffer sensors		Motor on/off when lever moved	Ok		
13	Nozzle detection	LED current	mA	0-40	Ok	11	9
14		Motor current forward	mA	20-135	Ok	69	
15	Index unit	Tooth sequence		Busy	Not done		
16		Min/max tooth pitch		Not done	Not done		
17		Min/max tooth width		Not done	Not done		

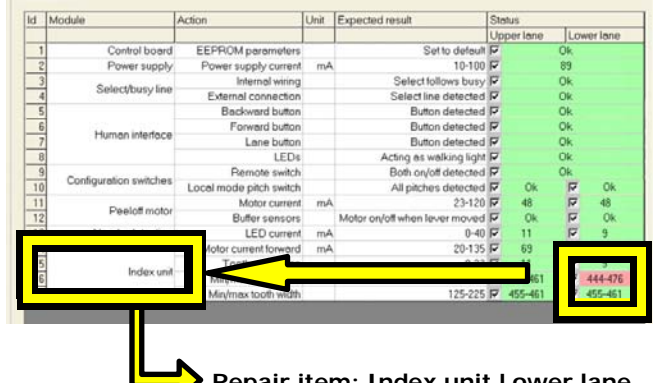


```

graph TD
    Start([Start]) --> Switch[Switch on tool, computer and start application.]
    Switch --> OnFeeder[On feeder: set 'Remote On']
    OnFeeder --> Insert[Insert feeder in tool]
    Insert --> SwitchOut[Switch on 'OUT' power]
    SwitchOut --> FeederRecognized{Feeder recognized?}
    FeederRecognized -- No --> End([End])
    FeederRecognized -- Yes --> PerformTest[Perform functional test]
    PerformTest --> MakeRepair[Make repair list]
    MakeRepair --> End
    
```

- Make repair list
- Look at the id numbers, see 4.5.1

Feeder repair actions to take from the analysing tool

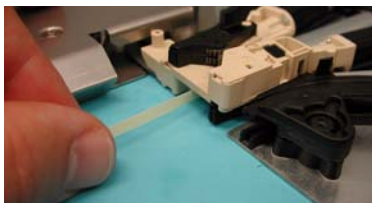


Repair item: Index unit Lower lane

4.5 Repair instructions

4.5.1 Feeder repair actions to take from the analysing tool

- If tests on the ITF-TTF analysis tool are rejected, perform the actions in this table.
- After each check or action start the test on the tool again.
- List all failed tests and make a repair list, see [4.8 Administration TTF](#) .

Problem	ID no analysis tool	Description 'Actions to take'	Note
Feeder is not recognized on Analysis Tool?	Identification box	<ul style="list-style-type: none"> • Check chart from operator • Set dip switch on feeder to 'Remote ON' (left pos.) • Turn on DUT / power • Check/ clean/replace contact pins, see 4.5.12.1 Contact pins, replacement • Check if feeder number on SW is equal to sticker • Replace controller board, see 4.5.6 Controller board, replacement 	If no feeder data is available on the Analysis Tool, calibration of Feeder is required
Pop up message 'Line up failed'	-	<ul style="list-style-type: none"> • Check the configuration of the feeder (that parts match with feeder version), see 4.5.3 Configuration check TTF 	
Controller board is not OK?	1	<ul style="list-style-type: none"> • Replace controller board, see 4.5.6 Controller board, replacement 	
Select line does not work?	2 & 3	<ul style="list-style-type: none"> • Replace controller board, see 4.5.6 Controller board, replacement 	
Human Interface is not functioning correctly?	5 - 8	<ul style="list-style-type: none"> • Check flex foil from human Interface to print controller • Check/replace human Interface, see 4.5.7 Human interface, replacement • Check/replace controller board, see 4.5.6 Controller board, replacement 	
Configuration switches do not work?	9 & 10	<ul style="list-style-type: none"> • Replace controller board, see 4.5.6 Controller board, replacement 	
Motor current peel-off unit too high/low?	11	<ul style="list-style-type: none"> • Check/replace springs, see 4.5.9 Peel off unit, replacement or bend back to straight situation. • Check wiring, see 4.5.2 Electrical connections, inspection • Check test with a metal strip (hasberg 0.20 mm) • Check/replace peel off module, see 4.5.9 Peel off unit, replacement , step 2 • Check/replace peel off motor, see 4.5.9 Peel off unit, replacement , step 3 • Replace peel off assy, see 4.5.9 Peel off unit, replacement , step 4 • Check with paper strip 5mmx120mm if the sprocket wheel on the "hidden" bottom side is turning when performing test 	
Buffer sensors not functioning?	12	<ul style="list-style-type: none"> • Move lever down & up several times. When lever is down, wait for 2 seconds. • Check/replace levers, see 4.5.10 Top foil guiding, parts replacement , step 4.5.10.3. • Check/replace sensor, see 4.5.10 Top foil guiding, parts replacement , step 4.5.10.4. 	
Nozzle detection not functioning properly?	13	<ul style="list-style-type: none"> • Clean nozzle catch, see 4.3 Cleaning instructions , step 3 • Check for lost components (=open feeder), see 4.3 Cleaning instructions • Check LL fibre glass, see 4.5.12.7 Nozzle catch lower lane, light guide replacement • Check/replace nozzle catch, see 4.5.12.5 Nozzle catch upper lane, replacement or 4.5.12.6 Nozzle catch lower lane, replacement • Check/replace nozzle catch print, see 4.5.13.4 Print nozzle catch, replacement 	
Motor current forward index unit to high?	14	<ul style="list-style-type: none"> • Clean sprocket wheel assy, see 4.3 Cleaning instructions , step 5 • Clean feeder, check for tape, see 4.3 Cleaning instructions • Check for lost components, see 4.3 Cleaning instructions • Check flex foil / connections, see 4.5.2 Electrical connections, inspection • Check/replace sprocket motor, see 4.5.13.6 Sprocket motor, replacement 	

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Tooth sequence is not OK?	15	<ul style="list-style-type: none"> • Check the configuration of the feeder^a (that parts match with feeder version), see 4.5.3 Configuration check TTF • Clean feeder, check for tape, see 4.3 Cleaning instructions • Clean/adjust sprocket sensor, see 4.6.1 Sprocket sensor, adjustment and testing • Check/replace sprocket sensor, see 4.5.13.7 Sprocket sensor, replacement • Check/replace sprocket wheel, see 4.5.13.6 Sprocket motor, replacement • Check/replace sprocket print, see 4.5.13.1 Sprocket print, replacement
Tooth pitch is not OK?	16	<ul style="list-style-type: none"> • Check the configuration of the feeder^b (that parts match with feeder version), see 4.5.3 Configuration check TTF • Clean & Adjust sprocket sensor, see 4.6.1 Sprocket sensor, adjustment and testing • Check/Replace sprocket wheel, see 4.5.13.6 Sprocket motor, replacement • Check/Replace sprocket print, see 4.5.13.1 Sprocket print, replacement
Tooth width is not OK?	17	<ul style="list-style-type: none"> • Check the configuration of the feeder (that parts match with feeder version), see 4.5.3 Configuration check TTF • Clean & Adjust sprocket sensor, see 4.6.1 Sprocket sensor, adjustment and testing • Check/Replace sprocket wheel, see 4.5.13.6 Sprocket motor, replacement • Check/Replace sprocket print, see 4.5.13.1 Sprocket print, replacement

a. This step is only applicable when the tooth sequence is not OK **and** the tooth width is not OK at the same time.

b. This step is only applicable when the tooth sequence is not OK **and** the tooth pitch is not OK **and** the tooth width is not OK at the same time.

4.5.2 Electrical connections, inspection

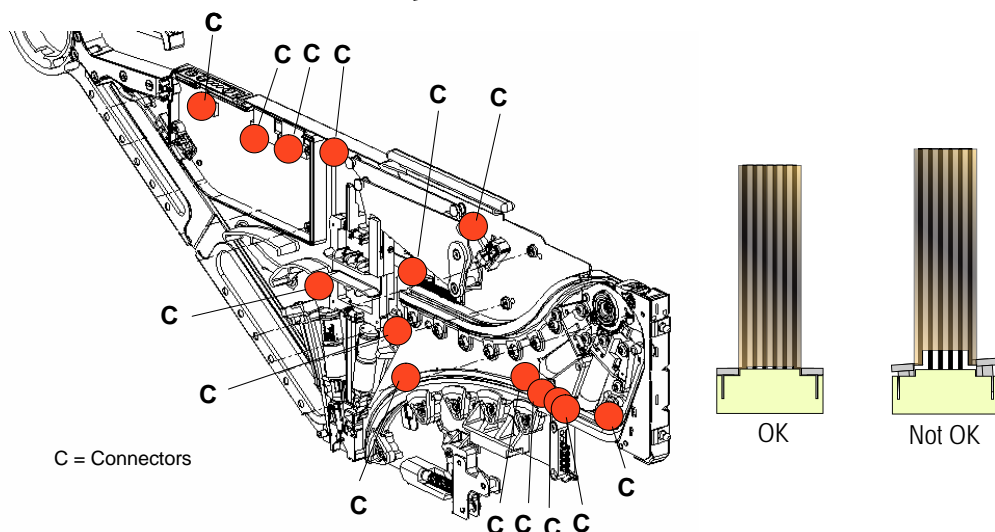


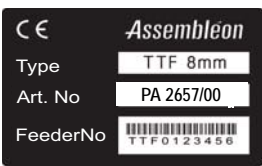

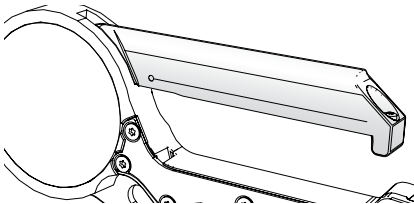
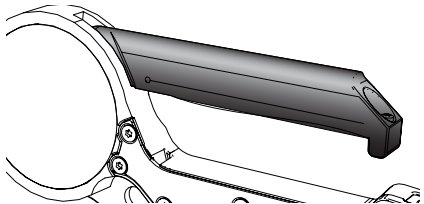
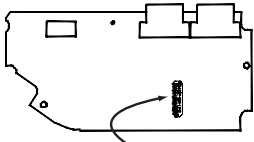
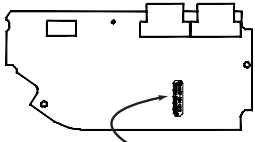
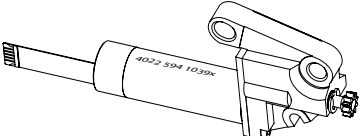
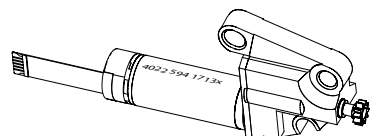
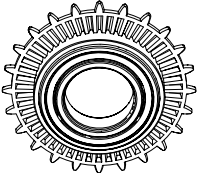
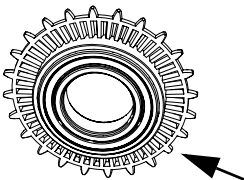
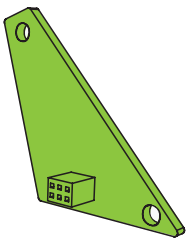
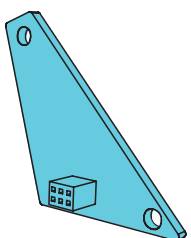
Figure 28 Connections, locations

Check that all flex foil connections are OK.

To see **all** connections:

Remove side plate and middle plate, see [4.5.13.3 Middle plate, replacement](#)

4.5.3 Configuration check TTF

	TTF release 1.0	TTF release 1.1
Type plate		
Handle		
Controller board	Marked with 4022-594-1215x on sticker 	Marked with 4022-594-1717x on sticker 
Sprocket motor	Marked with 4022-594-1039x 	Marked with 4022-594-1713x 
Sprocket wheel	All teeth same size 	1 short tooth 
Sprocket print	green color 	blue color 

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4.5.4 Tightening torques TTF



NOTE: Screws must be tightened with an automatic torque wrench to guarantee the correct setting.

■ Required torque:

- all T8 and T10 screws: 1Nm \pm 10%
- all T6 screws: 0,22 Nm \pm 10%
- All screws are special types. Screws can be reused.

Screws	Part	Quantity	
Screw Delta PT 30x14	Earth contact block	1	T8 and T10 screw 1 Nm \pm 10%
	Top plate front	7	
Screw Delta PT 30x10	Top plate	13	
	Upper reel holder	3	
Screw Delta PT 30x10.9	Sprocket motor UL	3	
	Sprocket motor LL	3	T6 screws 0.22 Nm \pm 10%
Screw Delta PT 30x8	Turn point plate	5	
	Buffers	4	
	Cover print	4	
	Reel clamp	1	
Screw Delta PT 20x10	Peel-off unit	3	T6 screws 0.22 Nm \pm 10%
	Cover sprocket sensors	2	
	Nozzle catch UL	2	
Screw Delta PT 20x6	Top foil unit	4	
	Lever guide assy	2	
	Nozzle catch LL	2	Don't remove
	Middle plate	1	
	Lever guide print	1	
Screw Delta PT 20x4	Controller	2	
	Clip sensor UL	1	
	Nozzle catch LL light guide	2	

Figure 29 Overview screws Twin Tape Feeder

4.5.5 Recommended tools and materials TTF

Figure 30 gives a recommended list of tools and materials for repairing and cleaning the Twin Tape Feeders. All tools can be obtained locally.



NOTE: The used tools are only for those parts that can be replaced. Parts that cannot be replaced locally are not described in the replacement instructions.

Recommended tools and materials
Cleaning Material <ul style="list-style-type: none"> - Vacuum cleaner (for use in the workshop) - Lint free tissue paper - Soft lint-free cloth
Brushes <ul style="list-style-type: none"> - Small brush
Lubricating Material <ul style="list-style-type: none"> - CMD Anti-scoring EP Lube 3. Apply local safety regulations
Glue and agent <ul style="list-style-type: none"> - Loctite 480 - Loctite 7400
Fastening Tools <ul style="list-style-type: none"> - Torque wrench machine (0.2 - 1 Nm) Torx T6, T8 and T10
Screwdrivers <ul style="list-style-type: none"> - Torx no. T6, T8 and T10 - Screwdriver for M3
Other Tools <ul style="list-style-type: none"> - Hammer (200 gr.) - Dowel punche ~ 1.5mm (0.06") - Pliers - A pair of tweezers - Paper strip 5mm x 120mm - Feeler Gauge

Figure 30 List of tools

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4.5.5.1 Repair tools TTF

These tools are additionally required to repair and adjust a TTF.

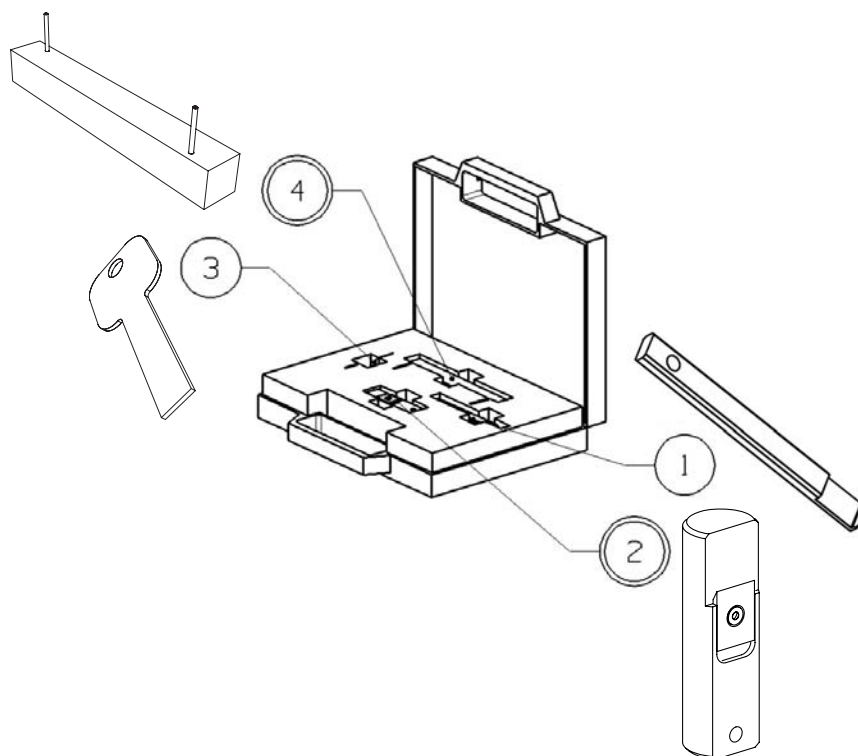


Figure 31 TTF repair tools

1. Sprocket motor lifter
2. Side plate opener
3. Adjustment key ncul
4. Removing tool ncul

4.5.6 Controller board, replacement

Estimated time to complete [min.]: -
 Required special tools: Torque wrench (0.2 - 1 Nm) Torx 10
 Required part(s) Analysis tool



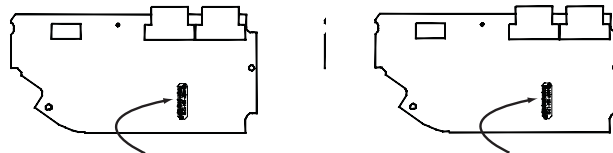
ESD SENSITIVE ELECTRONICS
 Electro Static Discharge may cause damage to electronics.
 Work in an ESD safe environment or use ESD preventive measures.

1. Prerequisites

Use the correct version:

TTF release 1.0x (PA 2657/00)
 Marked with 4022-594-1215x on sticker

TTF release 1.1 (PA 2657/01) and newer
 Marked with 4022-594-1717x on sticker



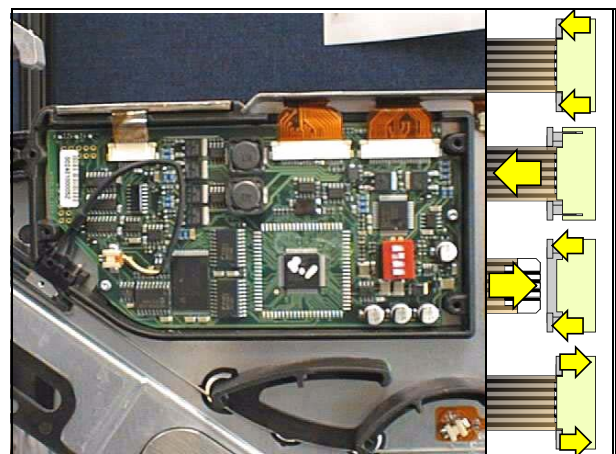
- Place the feeder on the analysis tool for transfer of calibration data, see [4.4 Analysis TTF](#).

Note: If no communication is possible, the feeder must be calibrated afterwards.

- Remove the cover.

2. Replacing the controller board

- Go to 'Replace controller board' in feeder repair menu on the analysis tool.
- Select 'Read feeder data'.
- Switch off 'DUT power'.
- Exchange controller.
- Replace human interface.
- Switch on 'DUT power'.
- Type in correct serial number as on identification sticker ('old' S/N).
- Select 'Write feeder data'.



3. Finalize

- If the transfer of calibration data failed: Calibrate the feeder, see [4.7 Calibration TTF](#).
- Install cover, see [4.5.7 Human interface, replacement](#).

Note: The interlock switch adjustment is no longer necessary.

TTF-00009.fm

4.5.7 Human interface, replacement

Estimated time to complete [min.]: -
 Required special tools: Torque wrench (0.2 - 1 Nm) Torx 10
 Required part(s) -



ESD SENSITIVE ELECTRONICS
 Electro Static Discharge may cause damage to electronics.
 Work in an ESD safe environment or use ESD preventive measures.

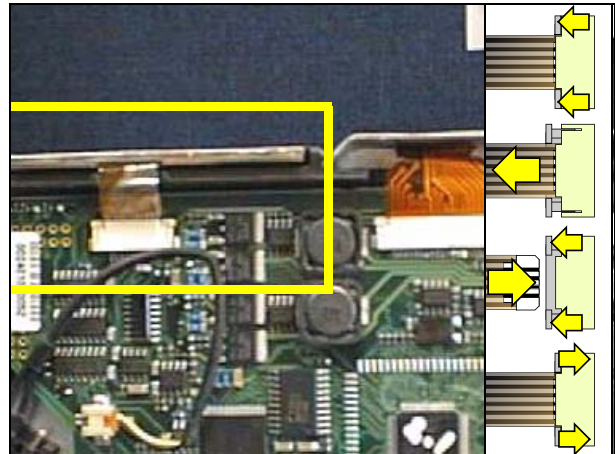
1. Replacing the human interface

- Remove cover.

2. Exchange human interface

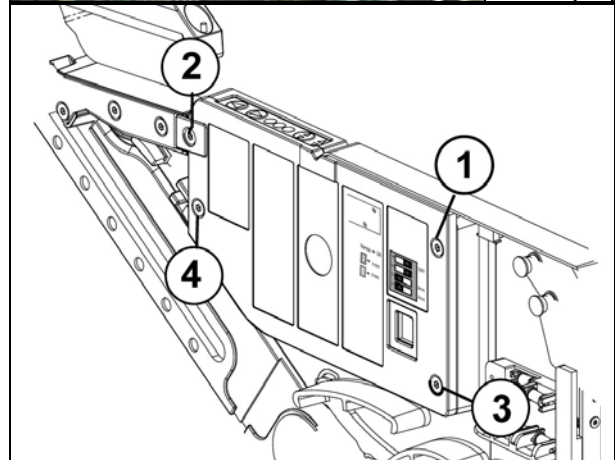
- Exchange the human interface.

Note: The flex foil must be bent the same way as the defective one.



3. Install cover

- Fasten the cover in the following order:
 - * First hand-tighten screws 1, 2, 3, 4, be careful with human interface and flex foils. Make sure they are not clamped.
 - * Torque screws 1, 2, 3 and 4 to 1 Nm \pm 10%.



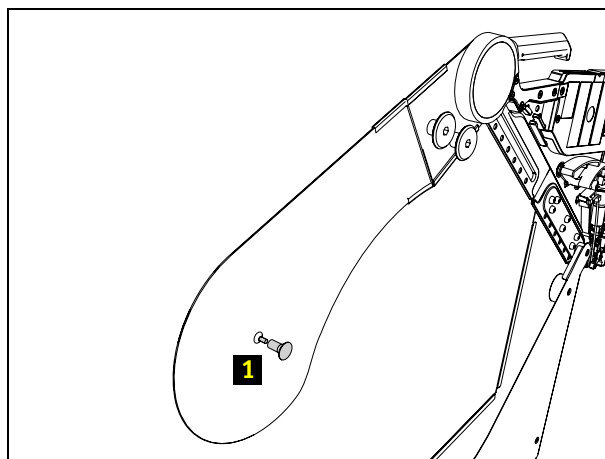
TTF-00034.fm

4.5.8 Reel holder assembly, replacement

Estimated time to complete [min.]: -
 Required special tools. Torque wrench (0.2 - 1 Nm) Torx 10
 Torx T10
 Required part(s) -

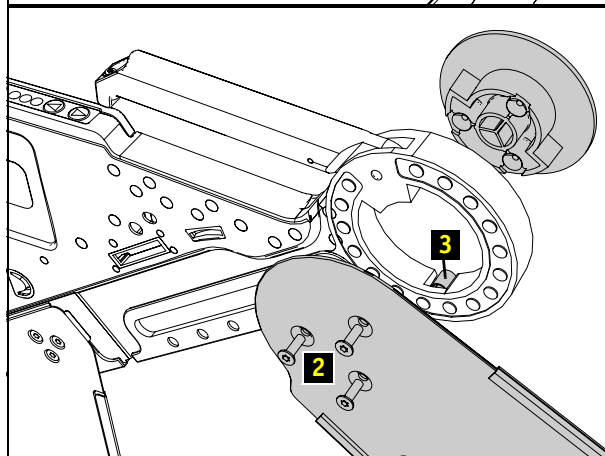
1. Reel clamp, replacement

- Remove screw (1).
- Apply Loctite 243 to the screw (1) and hand-tighten.



2. Reel holder upper lane, replacement

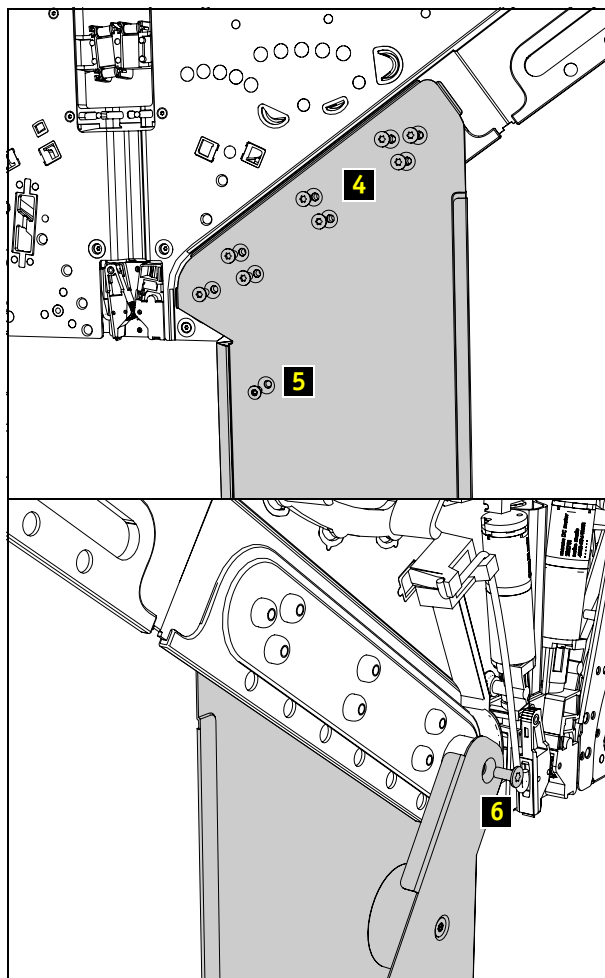
- Remove the 3 screws (2).
- Leave the spring (3) in place.
- Screw torque reel holder: 1Nm \pm 10%.



TTF-00010.fm

3. Reel holder lower lane, replacement

- Remove the 8 screws M3x4 (4).
- Remove the torx screw (5) holding the distance piece.
- Remove screw (6).
- Replace the reel holder assembly.
- Screw torque reel holder: $1\text{Nm} \pm 10\%$.



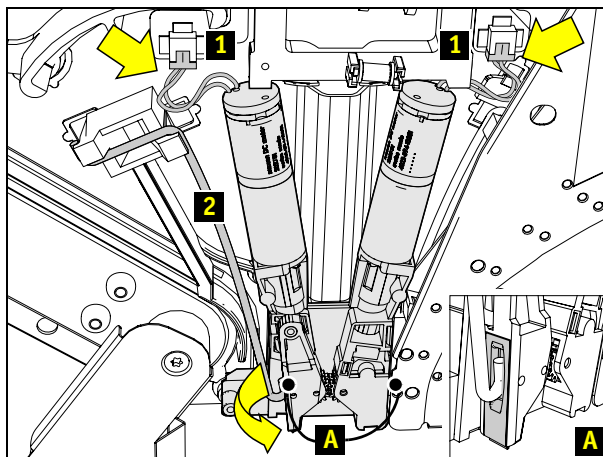
TTF-00010.fm

4.5.9 Peel off unit, replacement

Estimated time to complete [min.]: -
 Required special tools. Torx T6
 Required part(s) -

1. Remove spring and wiring peel off unit

- CAREFULLY disconnect the cable of the peel off motors (1). Push lips back to disconnect the connector.
- Detach the spring (2).

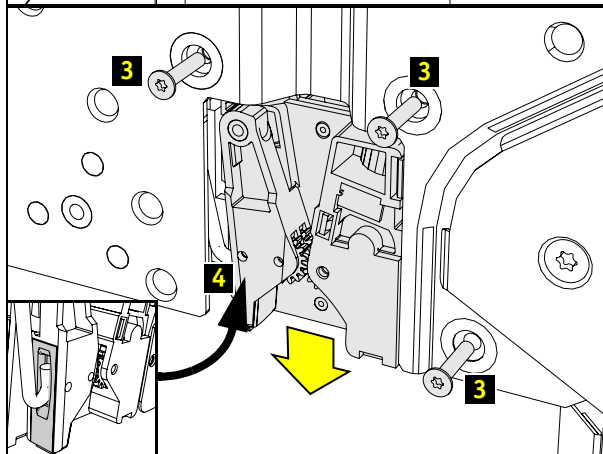


2. Replace peel off unit

- Remove the screws (3) at the rear side.
- Take off the complete peel off unit.
- Parts that can be replaced, see
 - * [3. Replacing the peel-off motor\(s\)](#)
 - * [4. Replacing the handle\(s\)](#)
- Install peel off unit in reverse order:

Note: Make sure the motor wires do not touch the clamping lever cable.

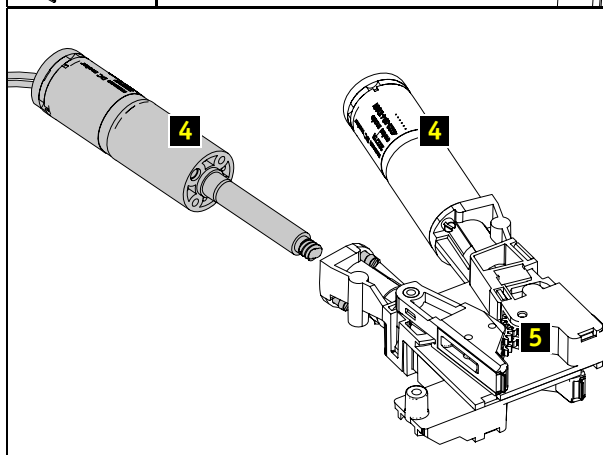
Note: Check if covers (4) are present on both handles.



3. Replacing the peel-off motor(s)

Note: From feeder no. TTF 1003000 onwards the motors (4) and peel off module (5) can be replaced separately.

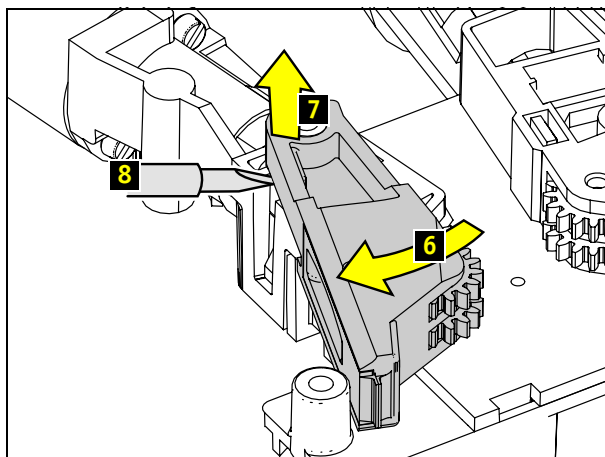
Note: Make sure the motor cables are facing towards the connectors, **not** straight forward or backwards.



TTF-00011.fm

4. Replacing the handle(s)

- Turn the handle in the outer position (6).
- Lift the handle from the peel off unit (7).
Use a small screw driver (8).
- Mount the new handle in the same position.



4.5.10 Top foil guiding, parts replacement

Estimated time to complete [min.]:

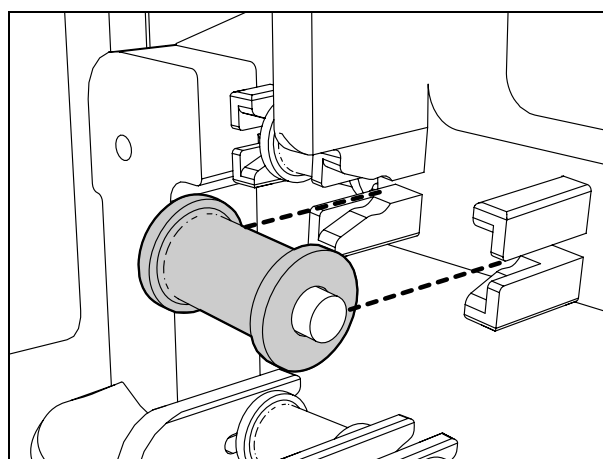
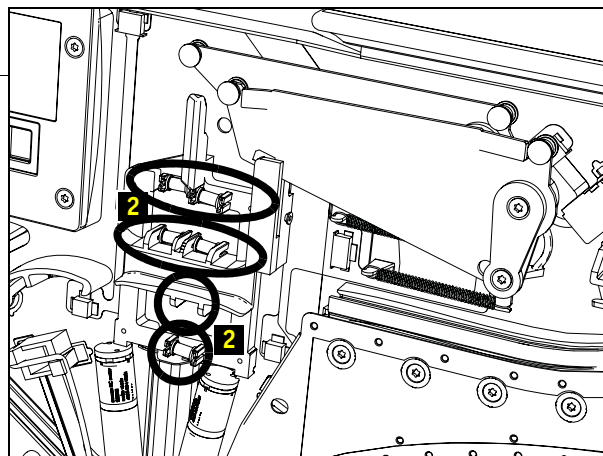
Required special tools.

Required part(s)

4.5.10.1 Transport roll, replacement

1. Replace rollers at the front

- Pull out the roller(s) (2).
- Transfer axle.
- Push the new roller in the guiding unit till it clicks in.
- Make sure that the rollers run free.

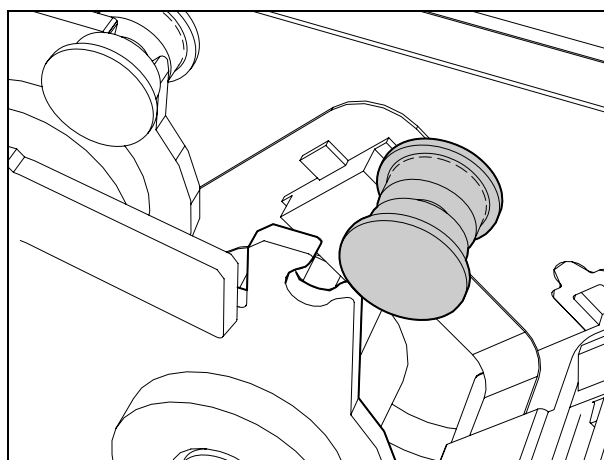
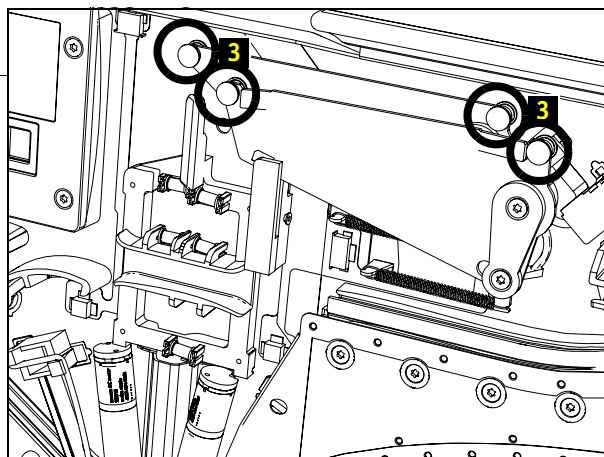


TTF-00012.fm

4.5.10.2 Lever roll, replacement

1. Replace lever roll

- Pull out the roller(s) (3).
- Push the new roller in the top foil buffer until it clicks in.
- Make sure that the rollers run free.



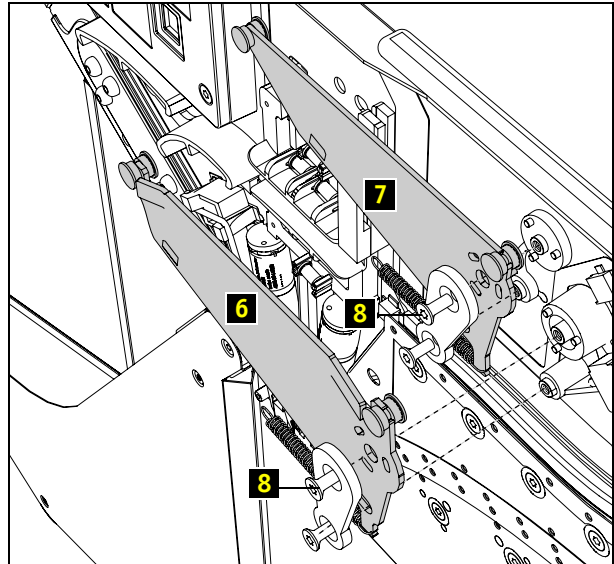
4.5.10.3 Top foil buffer, replacement

Note: When adjusting or replacing top foil buffer upper lane (7), remove top foil buffer lower lane (6) first.

- Remove spring.
- Don't bend the spring, use pliers
- Replace buffer (6,7).
- Tighten screws with $1 \text{ Nm} \pm 10\%$

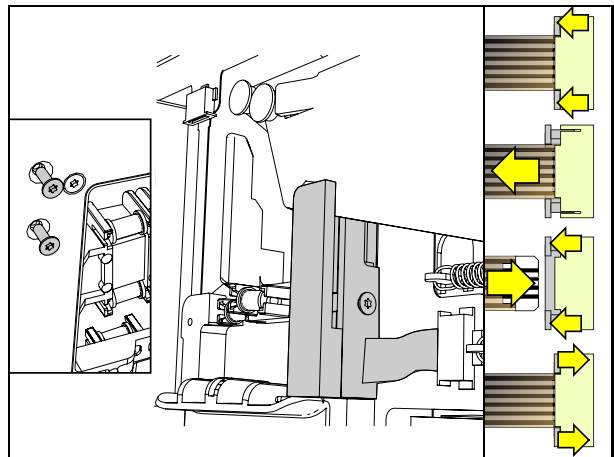
Note: Loosen screw (8) until buffer (6,7) comes down by its own weight.

- Replace the spring



4.5.10.4 Top foil buffer sensors, replacement

- Carefully disconnect the flat cable.
- Remove the two screws on the rear.
- Screw torque : $0.22 \text{ Nm} \pm 10\%$.
- Replace in reverse order



TTF-00012.fm

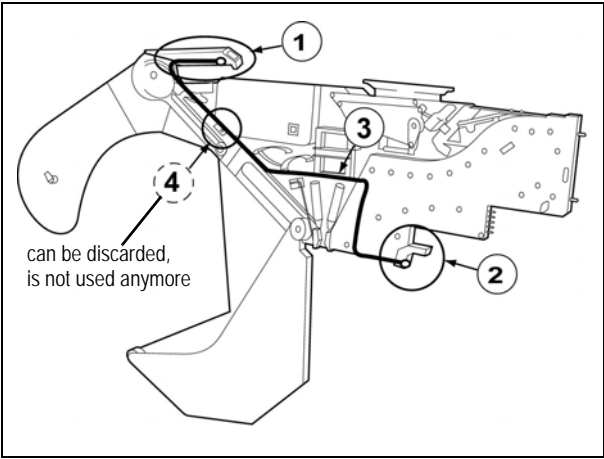
4.5.11 Clamping lever assembly, replacement

Estimated time to complete [min.]: -
Required special tools. -
Required part(s) -

1. Module overview

- Items for which local repair is possible:

Item	Description	Section
1 + 3	Handle with cable	4.5.11.1
2	Clamping Unit	4.5.11.2



TTF-00013.fm

4.5.11.1 Handle with cable, replacement

Estimated time to complete [min.]: -

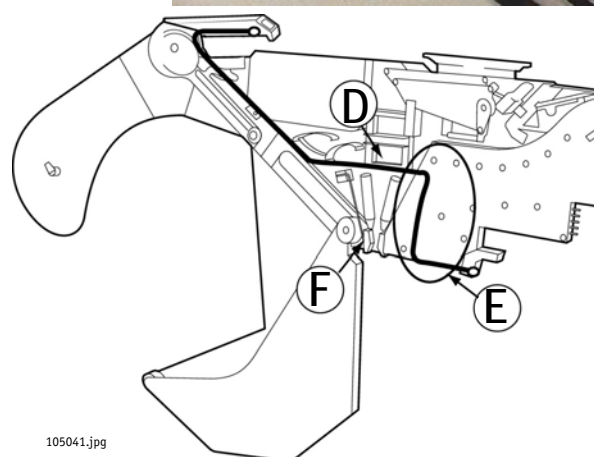
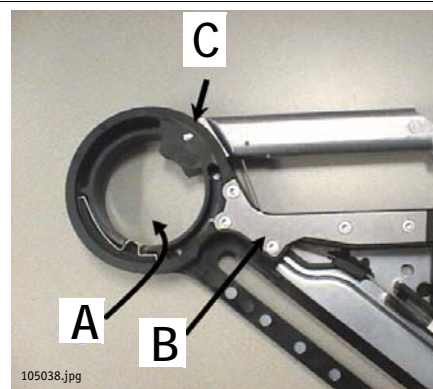
Required special tools:

- Nylon cord or bended metal wire, Dowel punch ~ 1.5mm, Hammer (200 gr.), Torx T6 and T10, pliers small

Required part(s) -

1. Remove handle

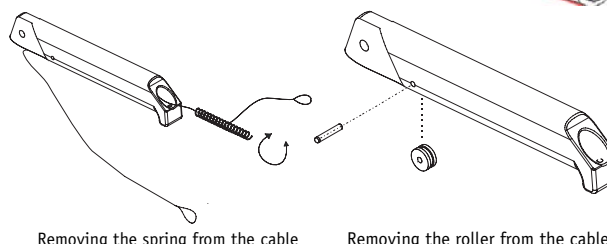
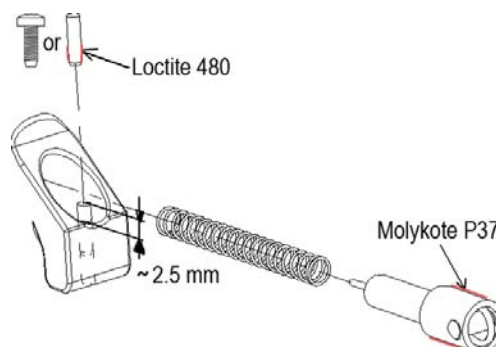
- At the bottom, disconnect the cable from the cable clamping unit.
- Remove the 3 screws (A) from the upper reel holder and the 5 screws (B) from the screening plate.
- Hammer dowel (C) downwards, by using a punch ~ 1.5mm. Pin does not have to be removed from this holder.
- Loosen the lower two screws (D) from the top foil guiding unit (don't remove!)
- Loosen 5 screws (E) from the side plate (don't remove!)
- Remove the complete peel off motor assembly (F)
 - * Remove the left spring
 - * Remove the 3 screws from the peel off assembly
- Lift the side plate just enough to remove the right spring from under the side plate.
- Carefully remove the cable from under the top foil guiding unit
- Carefully pull the cable upwards. Guide the cable at the rear side of the feeder!



2. Removing the cable from the handle

The instruction below describe the procedure for taking the cable apart from the handle. Extract any necessary part of the procedure required for the replacement procedure of the part that is applicable you.

- Hammer pin downwards by using a punch ~ 1.5mm. Pin does not have to be removed from this holder.
- Hammer pin downward by using a punch ~ 2.5 mm, to disconnect the cable from the end of the spring bolt. Pin does not have to be removed from this holder.
- When the spring must be used again it has to be removed from the cable first.
 - * Rotate the spring from the cable.
- Remove pin by using a punch ~ 1.5 mm, to remove the roller. It is easier to insert the cable if the roller is removed.
- Replace the cable, if necessary.



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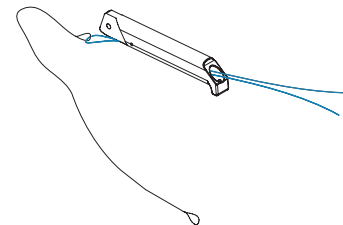
IRRITATING SUBSTANCE

Direct contact may cause irritation of the skin.
Avoid direct contact. Use Personal Protection Equipment.

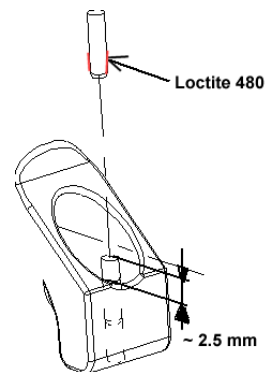
Note: When using Loctite 480: source locally and apply local safety regulations.

Note: A practical tip is to use a cord or similar item to pull the cable through the handle.

- Assemble in reverse order until the clamping lever is mounted.
- Secure pin by adding a small amount of Loctite 480.



Pulling the cable through the handle



Securing pin

3. Assembly handle with cable

- Assemble in reverse order
 - * Guide the cable eye under the side plate.

Note: Use a cord or bended metal wire to pull the cable under the side plate.

Note: The cable is positioned between base plate and right spring.

- Push the right spring under the side plate.
- Tighten the screws of the side plate, torque: 1 Nm.
- Install the peel-off motor assembly.
- Tighten the screws of the top foil guiding unit.
- ~~Position the micro switch actuator in the correct position.~~
~~For adjustment, see 5.6.1.~~
- Install the handle.

Note: Check if the cable is following all guidings in the correct way .

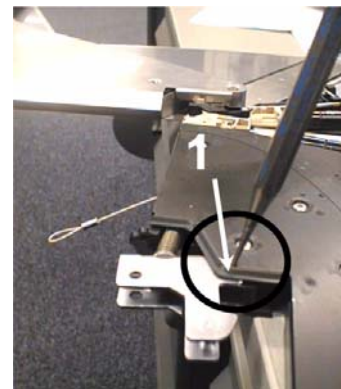
- Assemble the cable to the clamping unit.

4.5.11.2 Clamping unit, replacement

Estimated time to complete [min.]: -
 Required special tools. Small pliers, dowel punch ~1,5 mm
 Required part(s) -

1. Replace clamping unit

- Disconnect the cable from the clamping unit.
- Remove circlip.
- Remove the dowel (1) carefully with a punch.
- Push the retaining ring and spring together and carefully remove the clamping unit.
 Mind the spring and retaining ring!
- Replace necessary parts.
- Assemble in reverse order.



105040.jpg



105039.jpg

4.5.12 Base plate, replacements of parts

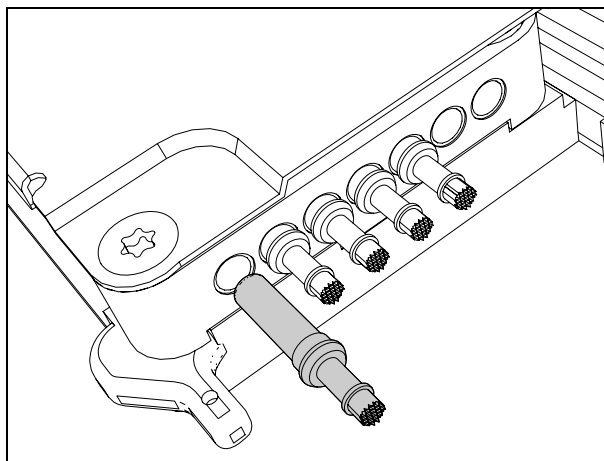
4.5.12.1 Contact pins, replacement

Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Replace contact pins

The TTF has 5 contact pins (7 positions).

- The pins can be removed manually. Don't use pliers (as this may damage the pin shape). Insert any new pin fully into the pin housing.

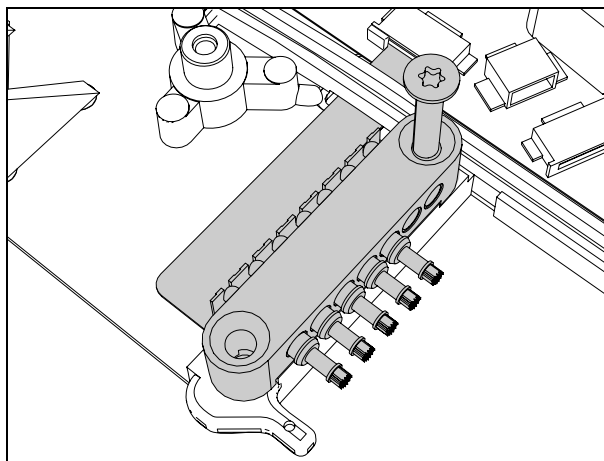


4.5.12.2 Contact block, replacement

Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Replace contact block

- Remove side plate, see [4.5.12.3 Side plate, replacement](#)
- Remove bolt and take contact block off.
- Remove flat cable.
- Assemble in reverse order.
- Install side plate, see [4.5.12.3 Side plate, replacement](#).



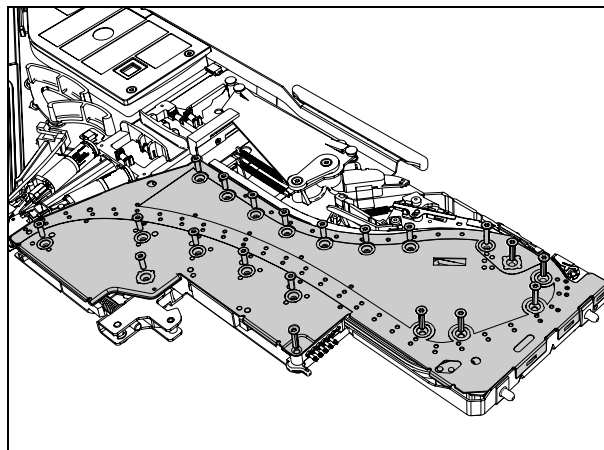
4.5.12.3 Side plate, replacement

Estimated time to complete [min.]: -
 Required special tools: Side plate opener, T8 (old TTF only), T10
 Required part(s) -

1. Remove screws

- Remove all screws.

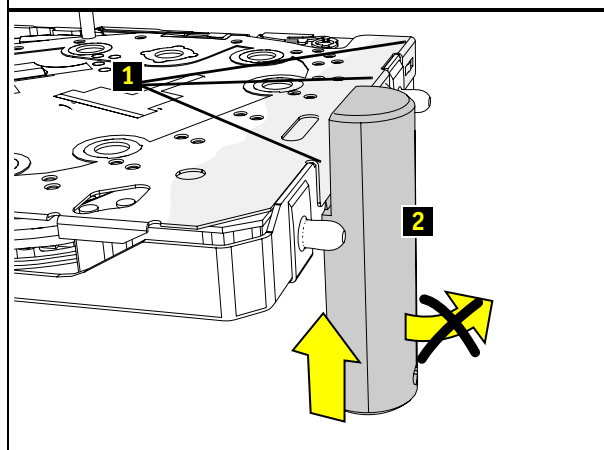
Note: The screws differ by length. Don't mix up the screws.



2. Release side plate at the front

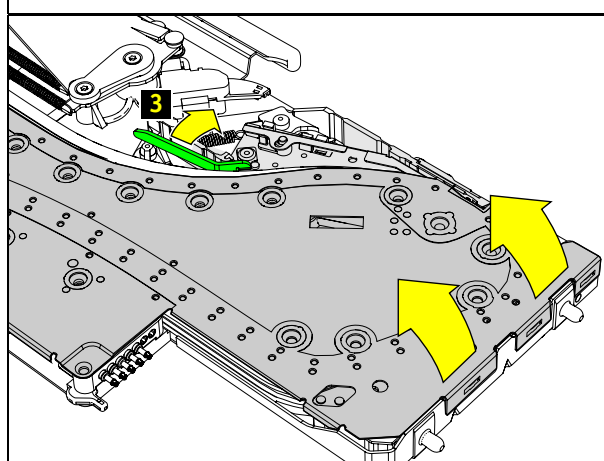
- Carefully lift the 3 clips (1) at the front of the feeder, using the side plate opener (2).
- Open slightly until the clips come loose.

Note: Take care that the clips are not bent otherwise the feeder cover cannot be closed any more. If bended, the feeder can not be fully inserted into the feeder bar. This will give bad pick performance.



3. Remove side plate

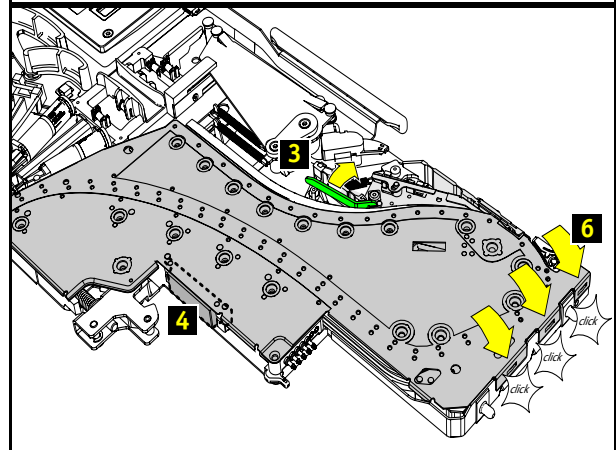
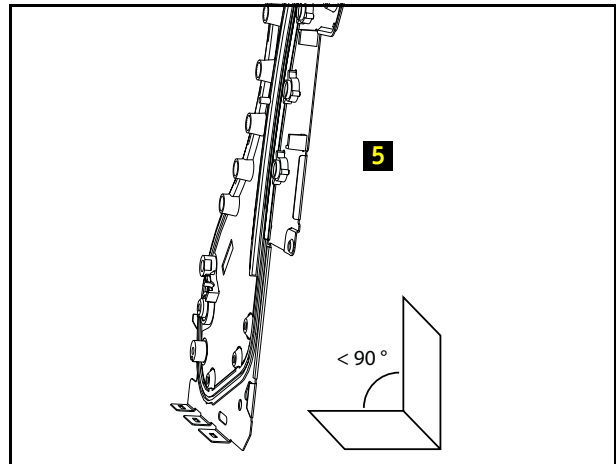
- Keep the nozzle catch lower lane in the upper position (3) and remove the side plate.



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4. Position side plate

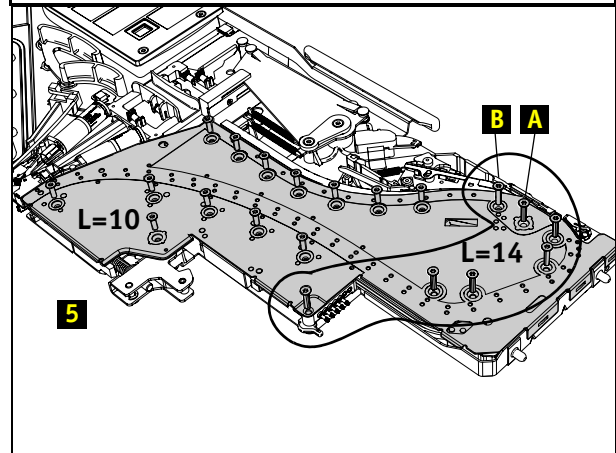
- Clean the area.
- Mount the guide block (4).
- Bend the clips at the front of the plate in an angle smaller than 90°: push the plate on a table (5).
- Keep the nozzle catch lower lane in the upper position (3) and position the side plate.
- Push clips at the front of the feeder until you hear a click (6).



5. Secure side plate

- Mount all screws.
Tightening torque 1 Nm ± 0.1 Mm.

Different types	Amount	Screw type	Tooling	Remarks
First batches of feeders	14x 6x	30x10 30x14	Torx 10 Torx 8	Tighten by hand
	14x 6x	30x10 30x14	Torx 10 Torx 10	If the sprocket wheel motor is not running smoothly, release screw "A" 90°!
From serial no. 1001750 onwards	13x 7x	30x10 30x14	Torx 10 Torx 10	Screw "B" is replaced by a long version. Can only be used in feeder versions with "through hole"

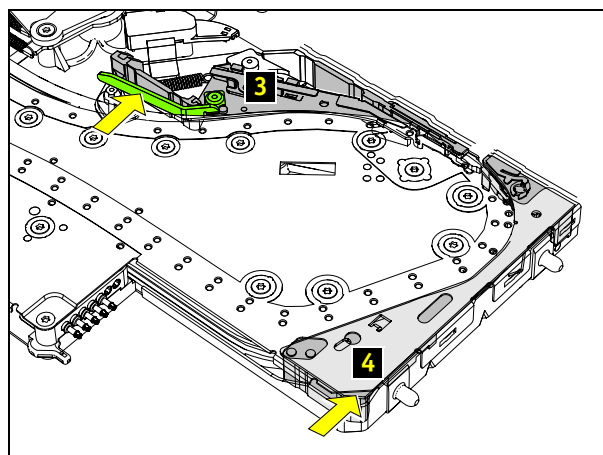


- Be sure screws don't stick out.

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6. Check function of nozzle catches

- Take care that the nozzle catch lower lane is not clamped between base plate and side plate.
- Check if the nozzle catch lower lane (3) is not clamped between side plate and base plate.
- Check if the nozzle catch upper lane (4) is not clamped between side plate and base plate.



TTF-00015.fm

4.5.12.4 Guide block, replacement

Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Prerequisites

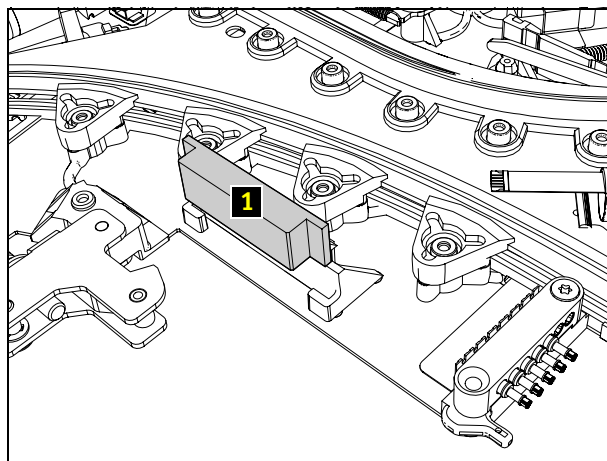
- Remove side plate, see [4.5.12.3 Side plate, replacement](#) .

2. Exchange guide block

- Exchange guide block (1).

3. Finalize

- Install side plate, see [4.5.12.3 Side plate, replacement](#)



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4.5.12.5 Nozzle catch upper lane, replacement

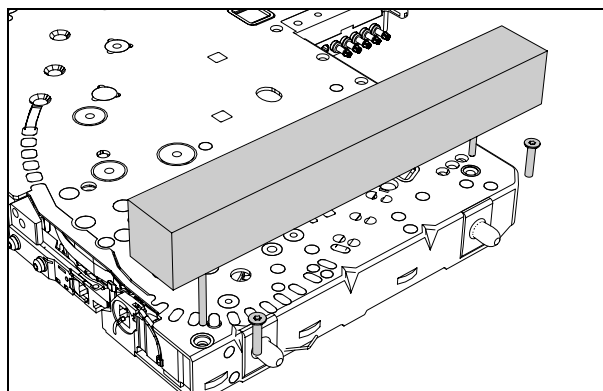
Estimated time to complete [min.]: -
 Required special tools: Nozzle catch removing tool, Screw driver T8
 Required part(s) -

1. Prerequisites

- Remove side plate, see [4.5.12.3 Side plate, replacement](#)

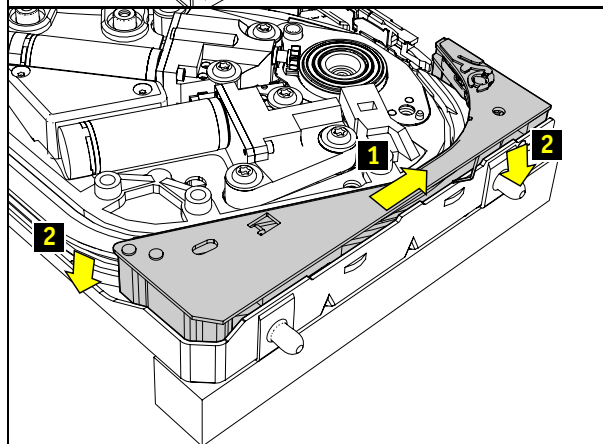
2. Mount nozzle catch tool

- Remove the two screws holding the nozzle catch.
- Position the tool in screw holes.
- Turn feeder with tool.



3. Remove nozzle catch upper lane

- Push the nozzle catch to upper position (1) and at the same time push the **feeder** gently down (2) over the two pins of the tool.
- Take off the nozzle catch.
- Remove tool.



4. Mount nozzle catch upper lane

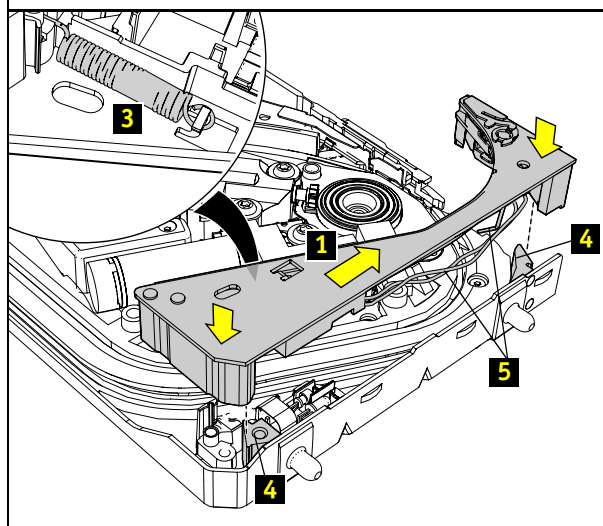
- Clean the feeder.
- Check position of spring (3).
- Position the nozzle catch 2 mm over the guidings (4). Push the nozzle catch to upper position (1) and at the same time push nozzle catch carefully down.

Note: Avoid clamping of fibres and earth spring (5).

- Push down the nozzle catch at both sides.
- Install the two nozzle catch screws.

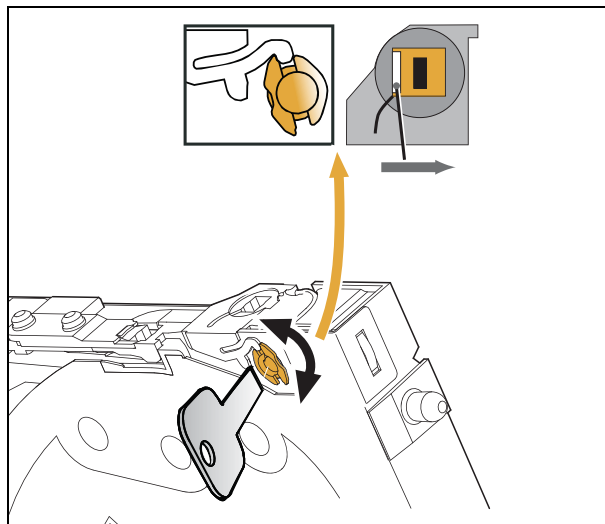
5. Finalize

- Install side plate, see [4.5.12.3 Side plate, replacement](#)



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6. Set the peel off plate to the front position



TTF-00016.fm

4.5.12.6 Nozzle catch lower lane, replacement

Estimated time to complete [min.]:

Required special tools.

Required part(s)

1. Remove nozzle catch lower lane

- Remove the two screws (1) at the rear, holding the nozzle catch.
- CAREFULLY remove the clip (2) from the sensor housing.
- Take the nozzle catch (3) off.

2. Install nozzle catch lower lane

- Assembly in reverse order.
- Do not damage the nozzle catch pick window when installing.
Check correct peel-off plate adjustment.
- Install the nozzle catch on the feeder.

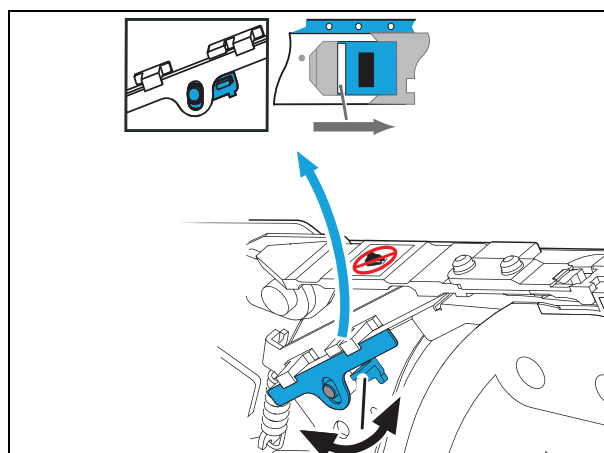
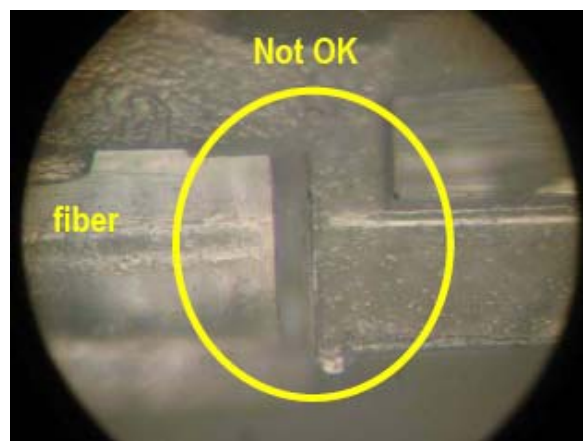
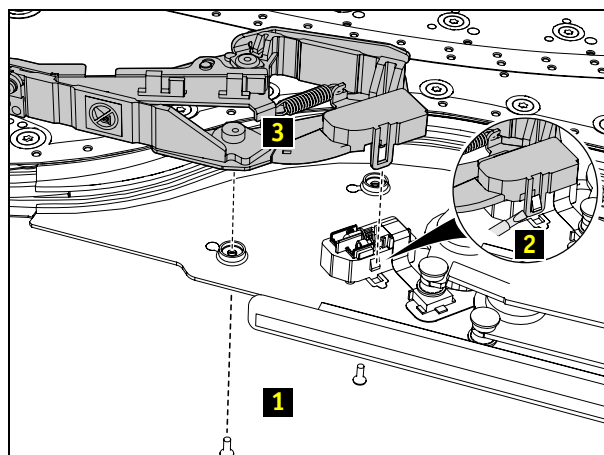
3. Test functionality nozzle catch lower lane

- Put the feeder on a loading unit.
- Switch the loading unit on.
- Index the Lower Lane with a small screwdriver.

Note: Use a small tool for indexing. Never use your finger, this can contaminate the sensor.

- When the index on the Lower Lane is OK, the feeder is ready for use.
- When the index on the Lower Lane is NOK, there are two possible causes:
 - * The glass fibre is not positioned correctly against the edge in the new light guide. This can be checked under a microscope. (see 4.5.12.7)
 - * There is another defect in the nozzle catch.
 Solution is to replace the complete nozzle catch Lower Lane

4. Set the peel off plate to the front position



TTF-00017.fm

4.5.12.7 Nozzle catch lower lane, light guide replacement

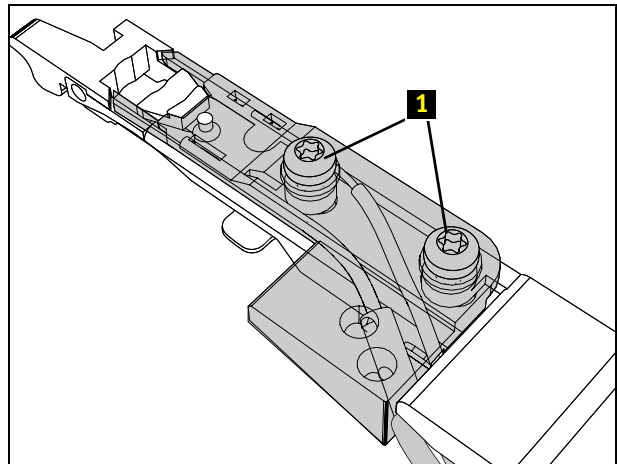
Estimated time to complete [min.]: -
 Required special tools. Torx T6
 Required part(s) -

1. Prerequisites

- Remove the nozzle catch lower lane, see [4.5.12.6 Nozzle catch lower lane, replacement](#)

2. Remove the damaged light guide

- Remove the two screws holding the light guide.
- Carefully pull the glass fibres upward out of the light guide while holding the light guide.



3. Install new light guide

Note: After removing the damaged light guide, notice that one fibre is thin and one fibre is thick. Because the thin glass fibre is more flexible, insert the thin glass fibre first.

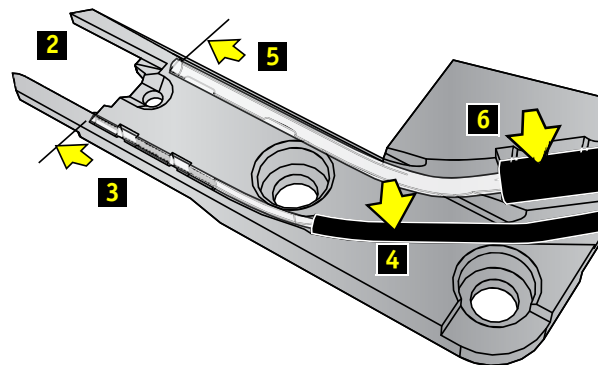
Note: Be careful when inserting the glass fibres in to the light guide, NOT to break the two guide pins (2).

Thin glass fibre:

- Insert the thin glass fibre into the new light guide.
- Push the fibre tip against the edge, as far as possible (3).
- Push the fibre in the light guide gutter.
- Firmly press the black fibre isolation into the light guide (4).
- Make sure the fibre is positioned correctly in the light guide gutter.

Thick glass fibre:

- Insert the thick glass fibre into the new light guide.
- Push the fibre tip against the edge, as far as possible (5).
- Push the fibre in the light guide gutter.
- Firmly press the black fibre isolation into the light guide (6).
- Make sure the fibre is positioned correctly in the light guide gutter



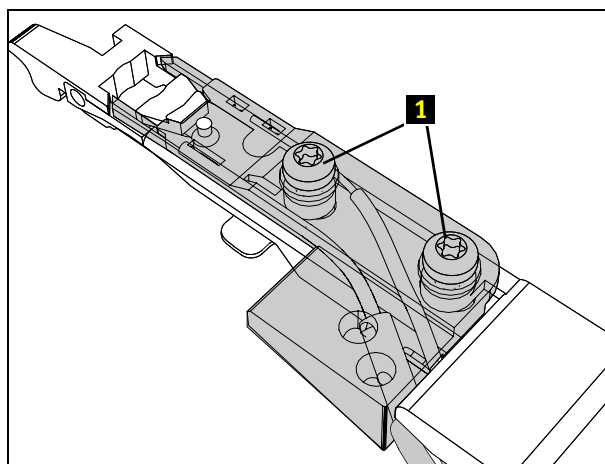
4. Install light guide

- Position the new light guide, with the glass fibres inserted, on the nozzle catch.
- Fasten the two screws.

Note: Do not fasten the two screws (1) too tight, this can damage the light guide.

5. Finalize

- Install the nozzle catch lower lane, see [4.5.12.6 Nozzle catch lower lane, replacement](#)



4.5.13 Indexing mechanism, replacement of parts

4.5.13.1 Sprocket print, replacement

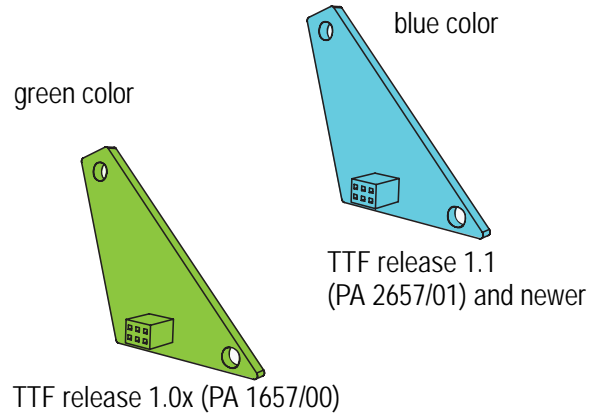
Estimated time to complete [min.]: -
 Required special tools. Torx T6
 Required part(s) -



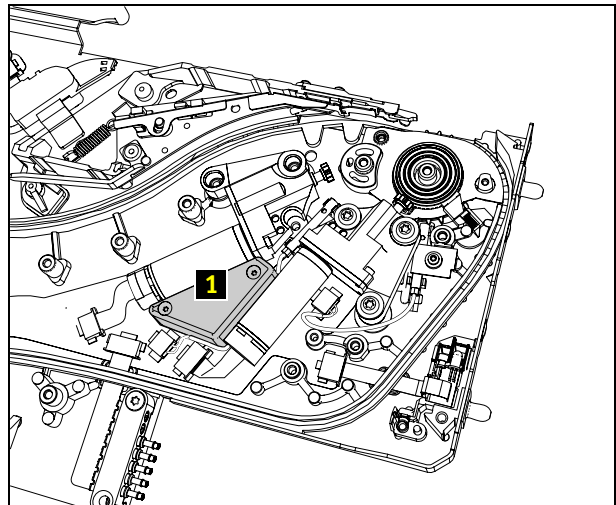
ESD SENSITIVE ELECTRONICS
 Electro Static Discharge may cause damage to electronics.
 Work in an ESD safe environment or use ESD preventive measures.

1. Prerequisites

Use the correct version:



- Remove side plate, see [4.5.12.3 Side plate, replacement](#)

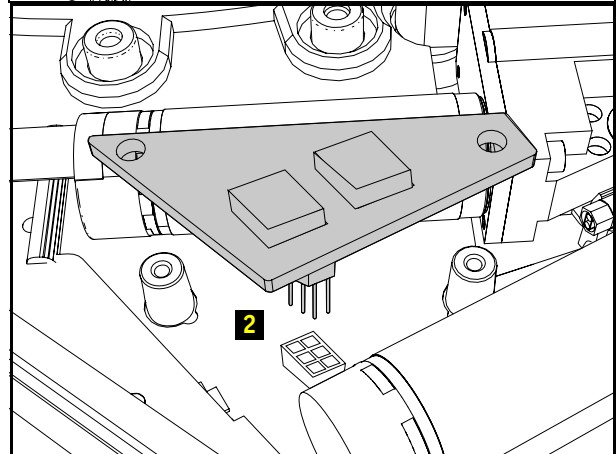


2. Replace sprocket sensor board

- Remove cover (1).
- Carefully pull the board out of the connector socket (2).
- Replace board.

3. Finalize

- Replace all parts in opposite order.
- Install side plate, see [4.5.12.3 Side plate, replacement](#)



TTF-00024.fm

4.5.13.2 Sprocket wheel lower lane, replacement

Estimated time to complete [min.]:	-
Required special tools:	Torx T6, T8 & T10, Torque wrench, top plate opener, Removing Tool Nozzle Catch, Loctite 480, Loctite 7400, Extreme Pressure Lube #3, Sprocket Motor Lifter
Required part(s)	-

1. Prerequisites

Use correct version:

Note: Replacement of the sprocket wheel requires calibration afterwards!

- Remove side plate, see [4.5.12.3 Side plate, replacement](#)

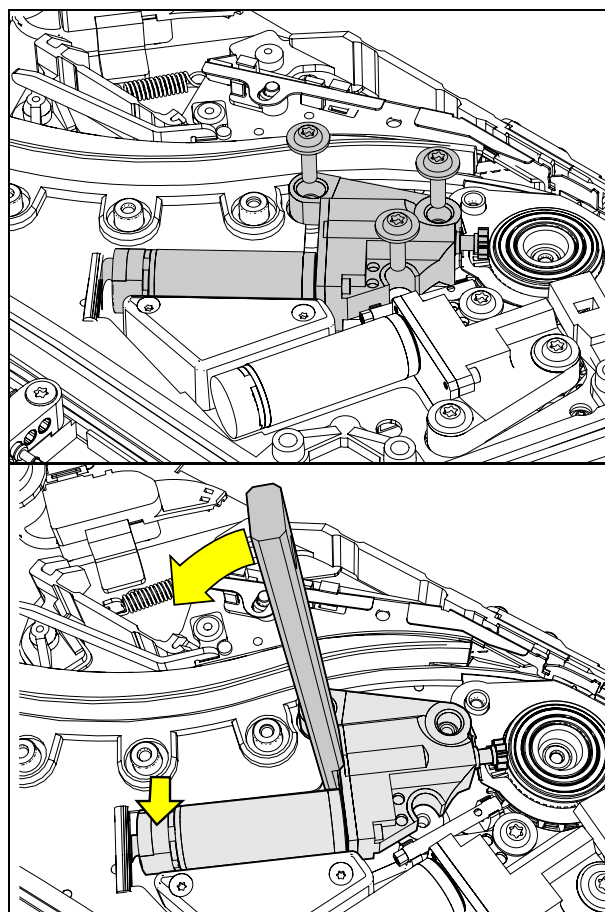
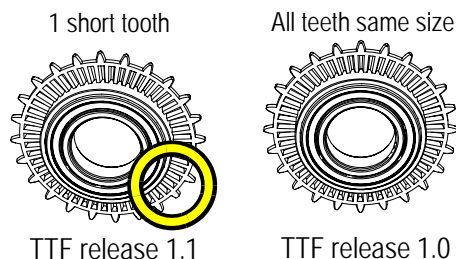
2. Remove screws

- Remove the three screws.

3. Release lower lane motor

- Release the motor (lower lane) from the base plate by using the sprocket motor lifter.

Note: Don't move too much or the connector of the motor will come loose.

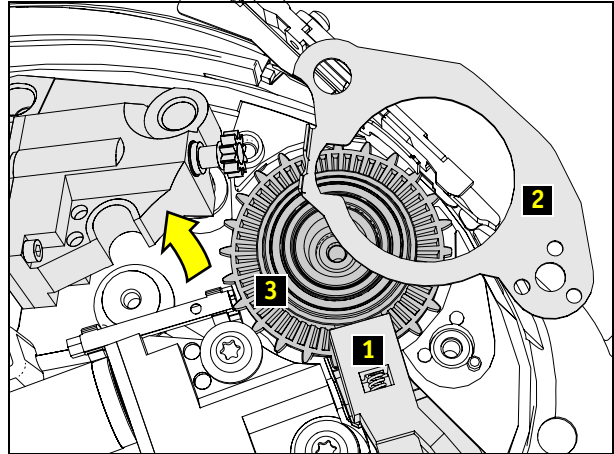


TTF-00023.fm

4. Remove sprocket wheel lower lane

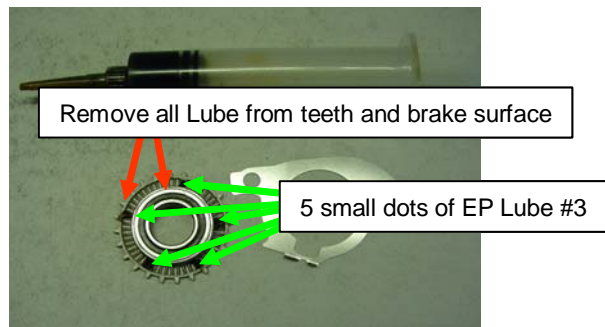
- Remove the brake (1).
- Lift the support sheet (2) off the position pins.
- Remove the sprocket wheel lower lane (3) of its axis.

Note: Don't mix up the sprocket wheels (sprocket wheel and sensor of each lane are calibrated).



5. Lubricate sprocket wheel

- Place with a knife or screwdriver five small dots of the Extreme Pressure Lube #3 on the sprocket-wheel where the crown gear teeth of the sprocket motor will drive the sprocket-wheel.
- Remove the surplus of lube after some rotations and all the lube that is placed on the teeth or brake-surface of the wheel.



6. Finalize

- Assemble in reverse order.
- Install side plate, see [4.5.12.3 Side plate, replacement](#)
- Calibrate the feeder, see [4.7 Calibration TTF](#)

4.5.13.3 Middle plate, replacement

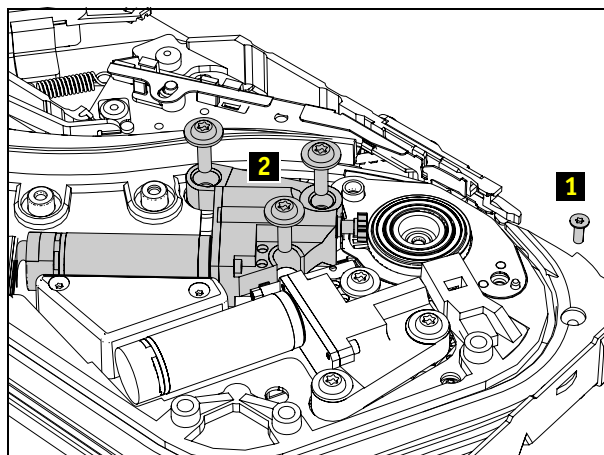
Estimated time to complete [min.]: -
 Required special tools: Torx T6, T10, sprocket motor lifter
 Required part(s)

1. Prerequisites

- Remove nozzle catch upper lane,
 see [4.5.12.5 Nozzle catch upper lane, replacement](#) .

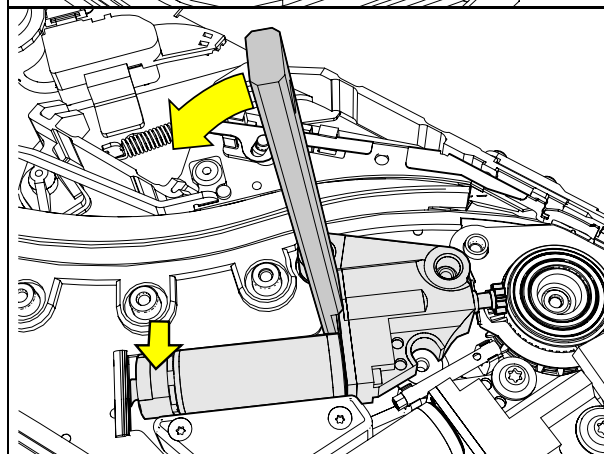
2. Remove screws

- Remove the screw (1).
- Loosen the three screws (2).



3. Release lower lane motor

- Release the motor (lower lane) from the base plate by using the sprocket motor lifter.



4. Remove middle plate

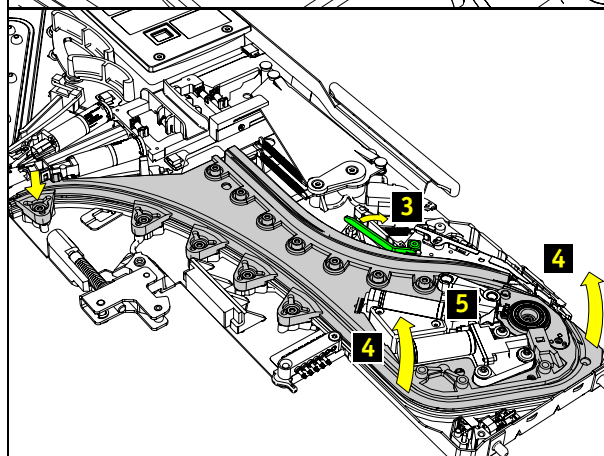
- Keep the nozzle catch lower lane in the upper position (3) and raise (4) the middle plate.
- Take care of the sprocket motor (5) meanwhile.
- Remove the middle plate.

5. Install middle plate

- Assembly in reverse order.

Note: Connect the lower lane motor (5) before installing the middle plate. Don't move too much or the motor will come loose.

Note: Middle plate must be hold down by top foil peel off assy.



6. Finalize

- Install nozzle catch upper lane, see [4.5.12.5 Nozzle catch upper lane, replacement](#)

TTF-00020.fm

4.5.13.4 Print nozzle catch, replacement

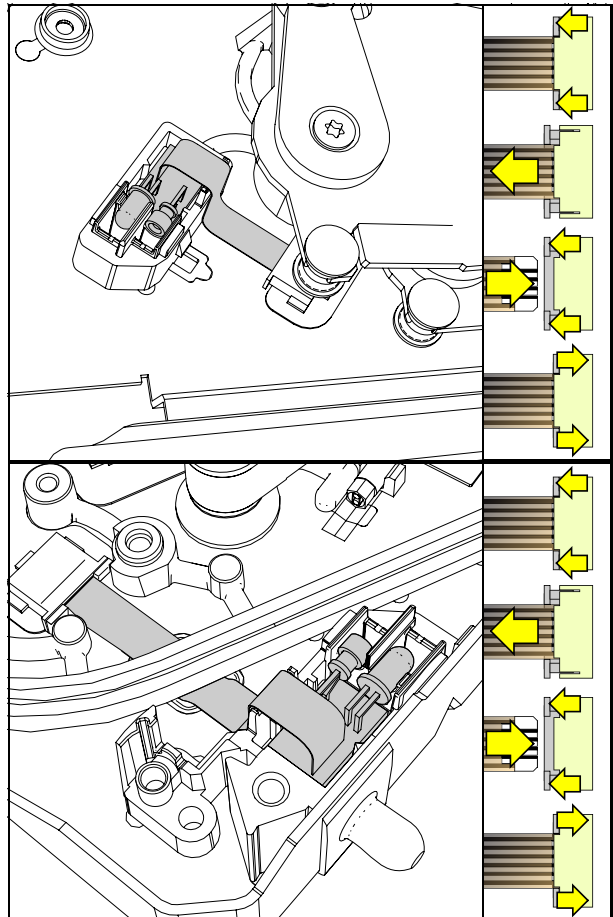
Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Replace print nozzle catch lower lane

- Remove the nozzle catch lower lane, see [4.5.12.6 Nozzle catch lower lane, replacement](#)
- Exchange print.
- Install the nozzle catch lower lane, see [4.5.12.6 Nozzle catch lower lane, replacement](#)

2. Replace print nozzle catch upper lane

- Remove the middle plate, see [4.5.13.3 Middle plate, replacement](#)
- Exchange print.
- Install the middle plate, see [4.5.13.3 Middle plate, replacement](#)



4.5.13.5 Brakes, replacement

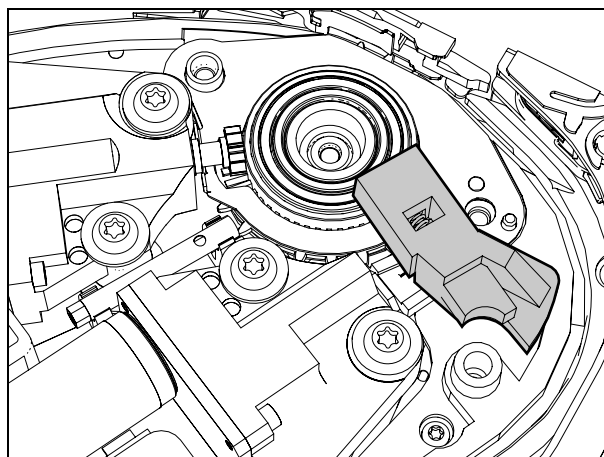
Estimated time to complete [min.]: -
 Required special tools. -
 Required part(s) -

1. Prerequisites

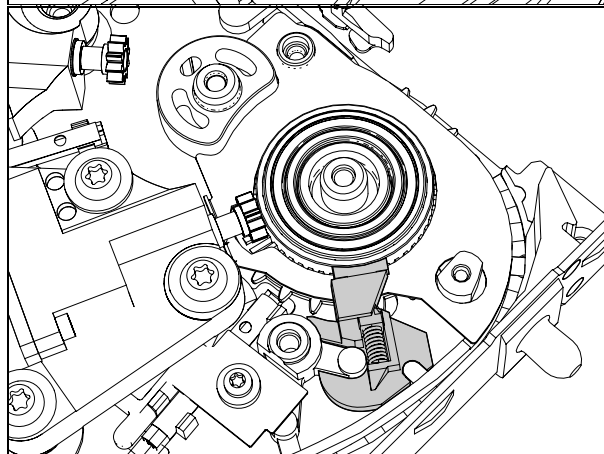
Note: Replace both brakes at the same time.

- Remove middle plate, see [4.5.13.3 Middle plate, replacement](#)

2. Replace brake upper lane



3. Replace brake upper lane



4. Finalize

- Install middle plate, see [4.5.13.3 Middle plate, replacement](#)

TTF-00033.fm

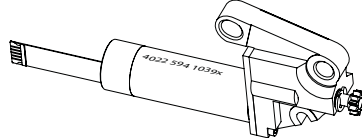
4.5.13.6 Sprocket motor, replacement

Estimated time to complete [min.]: -
 Required special tools. Torx T10, sprocket motor lifter
 Required part(s) -

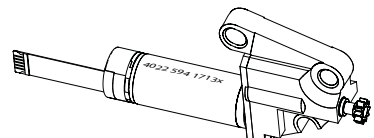
1. Prerequisites

Use the correct version:

TTF release 1.0x (PA 2657/00)
 Marked with 4022-594-1039x



TTF release 1.1 (PA 2657/01) and newer
 Marked with 4022-594-1713x

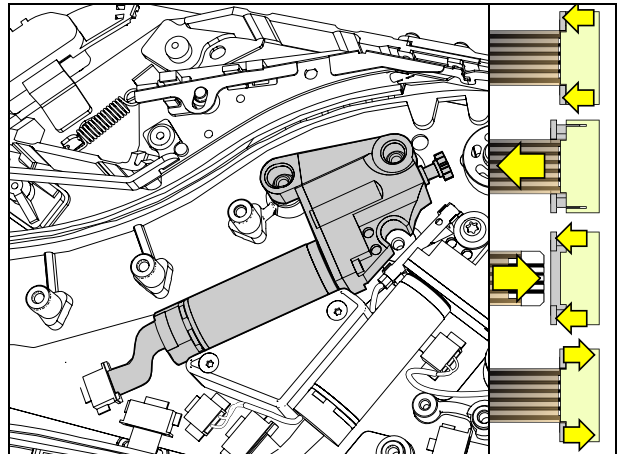


Note: Replacement of the sprocket motor requires calibration afterwards!

- Remove middle plate, see [4.5.13.3 Middle plate, replacement](#)

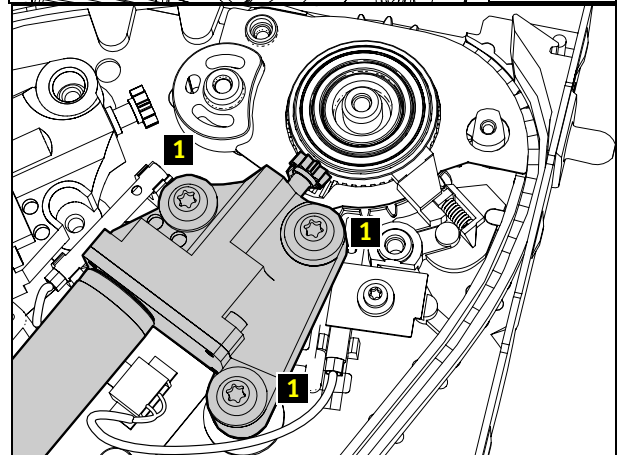
2. Replace sprocket motor lower lane

- Disconnect cable connection of sprocket wheel motor lower lane.
- Replace sprocket motor lower lane.



3. Loosen sprocket motor upper lane

- Remove the screws (1).
- Disconnect wiring.



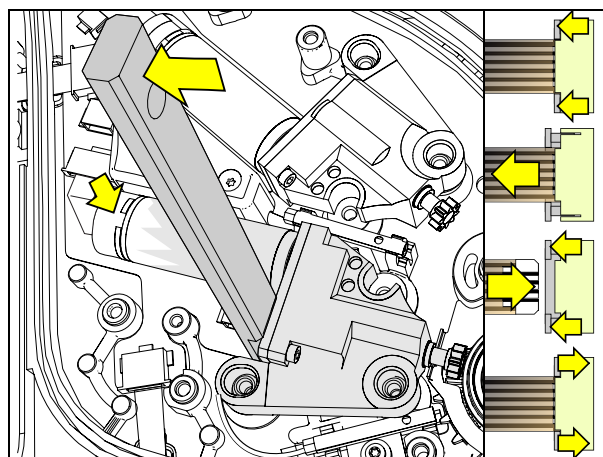
TTF-00021.fm

4. Release sprocket motor

- Release the motor from the base plate by using the sprocket motor lifter.

5. Finalize

- Install middle plate, see [4.5.13.3 Middle plate, replacement](#)
- Replace all removed parts in opposite order.
- Calibrate feeder, see [4.7 Calibration TTF](#)



TTF-00021.fm

4.5.13.7 Sprocket sensor, replacement

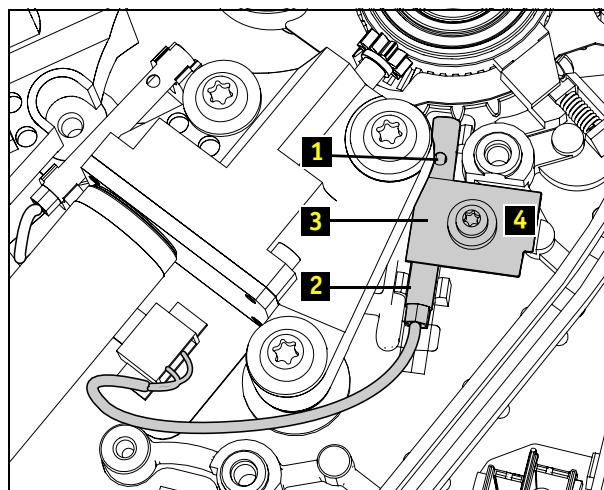
Estimated time to complete [min.]:	-
Required special tools.	Torx T6, T8 & T10, Torque wrench, top plate opener, Removing Tool Nozzle Catch, Loctite 480, Loctite 7400, Feeler Gauge, Sprocket Motor Lifter
Required part(s)	-

1. Replace the upper lane sprocket sensor

- Remove the middle plate, see [4.5.13.3 Middle plate, replacement](#)
- Loosen the screw (4) that holds the sensor and replace sensor.

2. Adjust the upper lane sprocket sensor

- Push the sensor against the tallest sprocket/tooth and pull back the sensor to achieve a minimal air gap (max. 0.03mm with feeler gauge).
- Check that the hole in the sensor is facing upwards (1).



Note: For the below standing 6 actions, the feeder needs to be placed on the Analysis Tool and powered ON ([4.6.1 Sprocket sensor, adjustment and testing](#)).

- * Make one complete turn with the sprocket wheel (indexing forward) while the sprocket wheel is firmly pressed down.
- * Check if the Upper Lane led on the Controller Board switches *On-Off* during each index step ('off' means tooth detected).
- * If one or more indexes still do not switch the LED on the controller board, check the sprocket wheel.

3. Secure the upper lane sprocket sensor

- * When all indexes are OK, the sensor needs to be secured with Loctite.
- * Put some loctite 480 on the sensor at the click connection with the base plate (2). Put some loctite 7400 on the upper spring part (3).
- * Fasten the screw that holds the sensor.

4. Finalize

- Install the middle plate, see [4.5.13.3 Middle plate, replacement](#)
- Calibrate the feeder, see [4.7 Calibration TTF](#).

TTF-00022.fm

5. Replace the lower lane sprocket sensor

- Remove the side plate, see [4.5.12.3 Side plate, replacement](#)

6. Adjust the lower lane sprocket sensor

- Push the sensor against a sprocket (any sprocket is OK) with a small screwdriver and pull back to achieve a very small air gap.
- Check that the hole in the sensor is facing upwards (1).

Note: For the below standing 6 actions, the feeder needs to be placed on the Analysis Tool and powered ON ([4.6.1 Sprocket sensor, adjustment and testing](#)).

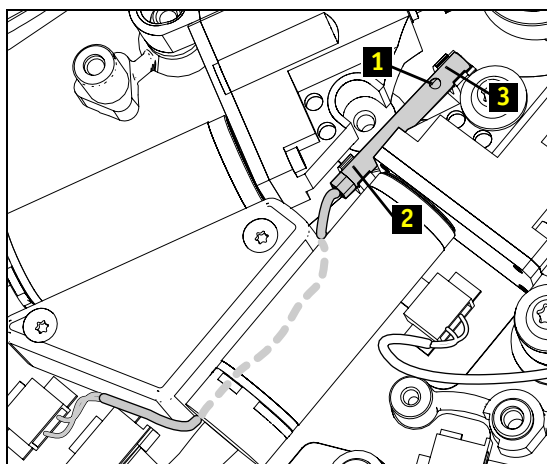
- * Make one complete turn with the sprocket wheel (indexing forward) while the sprocket wheel is firmly pressed down.
- * Check if the Lower Lane led on the Controller Board switches On-Off during each index step ('off' means tooth detected).
- * If one or more indexes still do not switch the LED on the controller board, check the sprocket wheel.

7. Secure the lower lane sprocket sensor

- * When all indexes are OK, the sensor needs to be secured with Loctite.
- * Put some Loctite 480 on the sensor at the lower click connection (2). Put some Loctite 7400 on the upper click connection (3).

8. Finalize

- Install the middle plate, see [4.5.13.3 Middle plate, replacement](#)
- Calibrate the feeder, see [4.7 Calibration TTF](#).



4.5.13.8 Sprocket wheel upper lane, replacement

Estimated time to complete [min.]: -
 Required special tools. Torx T10, Extreme Pressure Lube #3,
 sprocket motor lifter
 Required part(s) -

1. Prerequisites

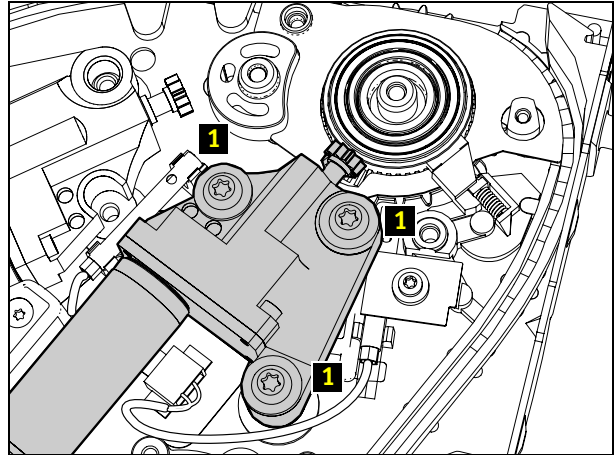
Note: This part exists in 2 technical versions, see [4.5.3 Configuration check TTF](#)

Note: Replacement of this part requires calibration afterwards!

- Remove the middle plate, see [4.5.13.3 Middle plate, replacement](#)

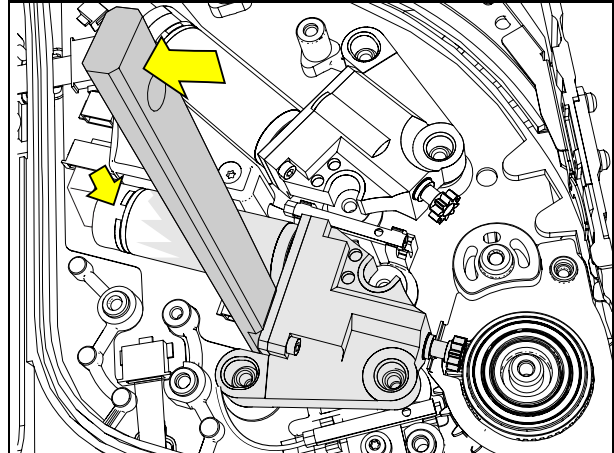
2. Loosen sprocket wheel motor

- Remove the screws (1).



3. Release sprocket wheel motor

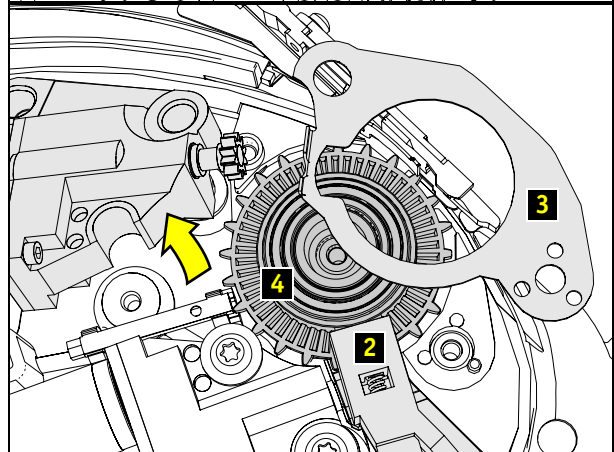
- Release the motor from the base plate by using the sprocket motor lifter.



4. Remove sprocket wheel

- Remove the brake (2).
- Lift the support sheet (3) off the position pins.
- Remove the sprocket wheel lower lane (4) of its axis.

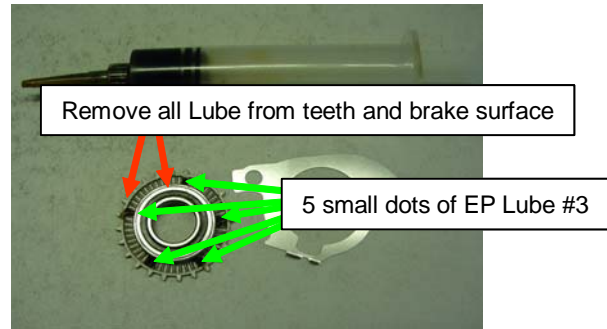
Note: Don't mix up the sprocket wheels (sprocket wheel and sensor of each lane are calibrated).



TTF-00032.fm

5. Lubricate sprocket wheel

- Place with a knife or screwdriver five small dots of the Extreme Pressure Lube #3 on the sprocket-wheel where the crown gear teeth of the sprocket motor will drive the sprocket-wheel.
- Remove the surplus of lube after some rotations and all the lube that is placed on the teeth or brake-surface of the wheel.



6. Finalize

- Assemble in reverse order.
- Install the middle plate, see [4.5.13.3 Middle plate, replacement](#)
- Calibrate the feeder, see [4.7 Calibration TTF](#)

TTF-00032.fm

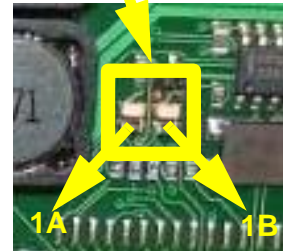
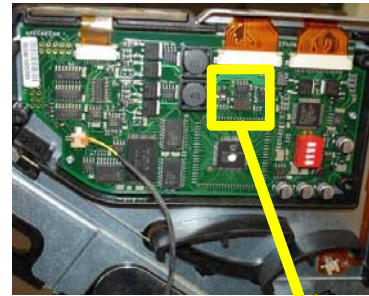
4.6 Adjustments and testing

4.6.1 Sprocket sensor, adjustment and testing

Required Tools	Tool Description
Analysis Tool	PA 2849/50
Calibration Tool	PA 2849/70

1.

- For index issues with the Twin Tape Feeder, the following test has been defined to check if the sprocket wheel sensors are placed correctly in the feeder. This test verifies if the sensor intensity is at the correct level during sprocket detection. In general: the closer the sprocket sensor to the sprocket, the better the signal.
- Remove the four screws of the feeder control board cover.
- Remove the cover.
- Place the feeder on Analysis Tool and switch the DUT power on.



2. Upper Lane, adjustment

- Select the Upper Lane on the human interface of the feeder.
- Index forward at least one complete turn.
- Check if the LED (1A) switches *On-Off* during each index step ('off' means tooth detected).

Note: Due to play of sprocket wheel this can also be verified manually in each index.

- If one or more indexes are missing (no LED signal), the sprocket sensor Upper Lane needs to be re-adjusted.
- If LED 1A lights *On-Off* during each index step, continue with a check of the Lower Lane.

Note: Release 1.1: The small tooth will not be noticed.

3. Lower Lane, adjustment

- On the human interface select the Lower Lane of the feeder.
- Index forward at least one complete turn.
- Check if the LED (1B) switches *On-Off* during each index step ('off' means tooth detected).

Note: Due to play of sprocket wheel this can also be verified manually in each index.

- If one or more indexes are missing (no LED signal), the sprocket sensor Lower Lane needs to be re-adjusted.
- If LED 1b lights *On-Off* during each index step, there is no need to re-adjust the sprocket sensor.
- In case Upper Lane or Lower Lane miss one or more indexes, both sprocket sensors need to be re-adjusted.

Note: Release 1.1: The small tooth will not be noticed.

4. Calibrate the feeder

- see 4.7 Calibration TTF .

4.7 Calibration TTF

4.7.1 When to calibrate a TTF

If one of the following questions is answered with yes, a feeder calibration is needed:

- Is the sprocket motor, sprocket wheel, sprocket sensor exchanged or adjusted ?
- Is the controller board exchanged without transferring calibration data?
- Has the feeder placed more than 6.000.000 components since last calibration?

4.7.2 How to calibrate a TTF



Figure 32

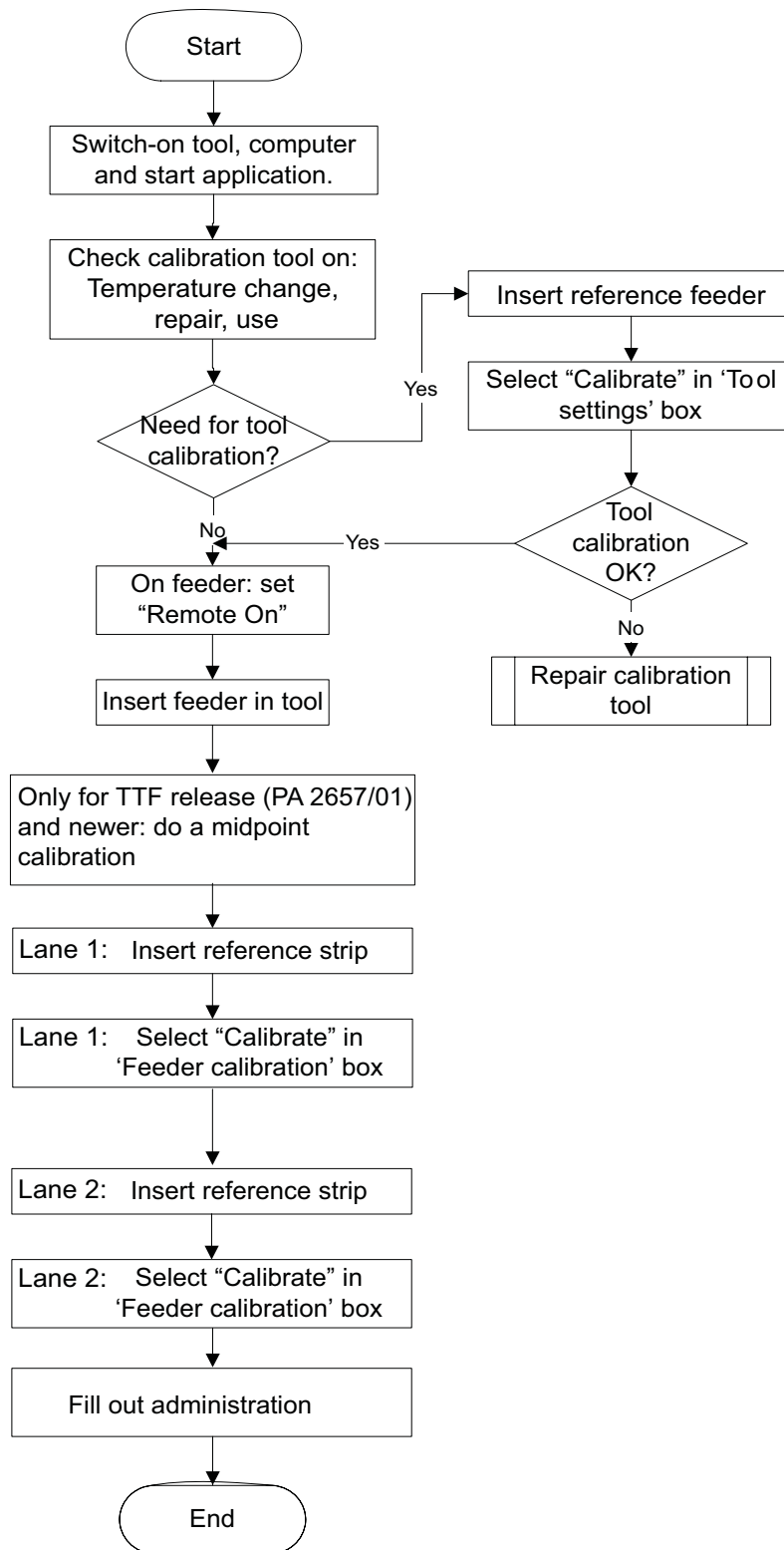


Figure 33 Calibration work flow

TTF-00027.fm

4.7.2.1 Calibration instruction

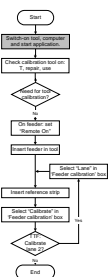
For TTF 1.1 and newer, do a midpoint calibration:

- While the power is off: place the feeder on the calibration tool (or loading unit).
- Select the back and forward button on the feeder, keep these buttons pressed down, and power up the calibration tool (or loading unit).
- The yellow LED and the lane selection LED are blinking.
- Select the lane selection button within 3 seconds.
- The feeder starts the midpoint calibration. This takes ± 3 minutes.

Calibration result:

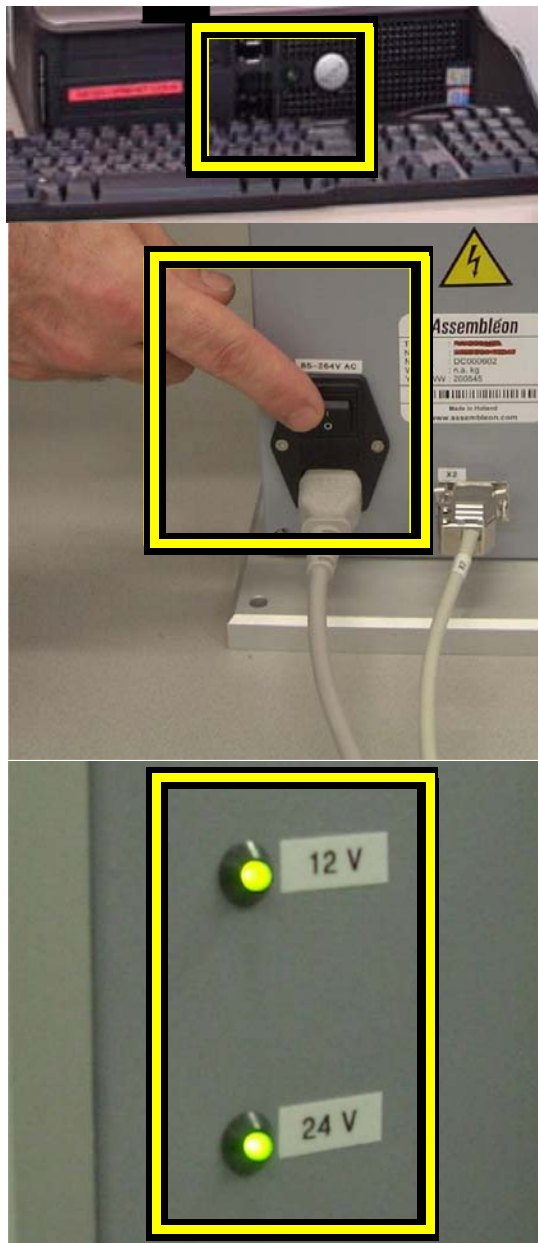
- OK:
Both lane selection LEDs and the green LED are illuminated.
- Not OK:
 1. One or both lane selection LEDs are not illuminated.
Action: start midpoint calibration again.
 2. Red LED is blinking.
Action:
 - Test the sprocket sensor, see [4.6.1 Sprocket sensor, adjustment and testing](#)
 - Check the version of the sprocket wheel, see [4.5.3 Configuration check TTF](#)

Calibration with calibration tool

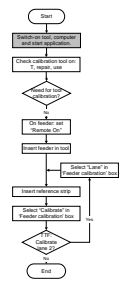
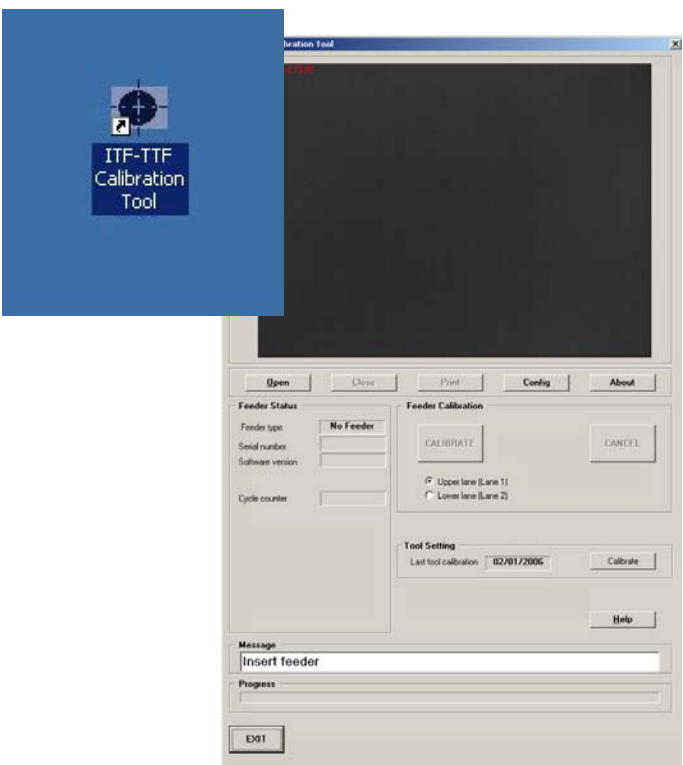
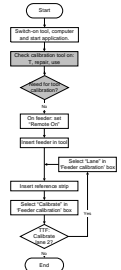
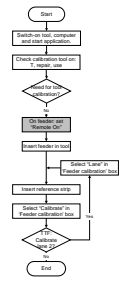
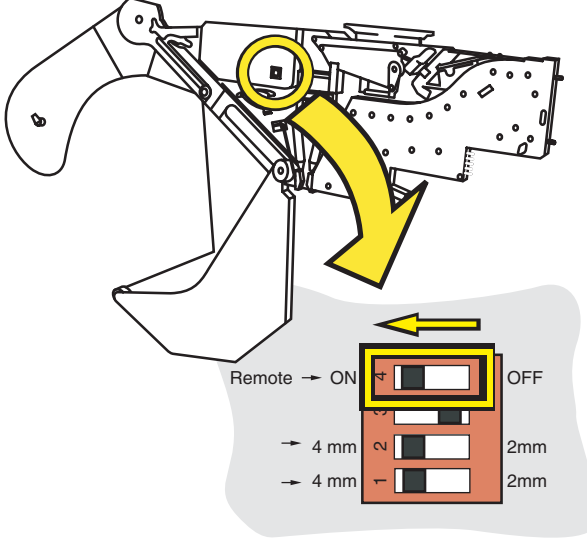


- Switch on computer and tool

- Both illuminated to continue



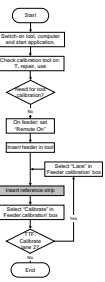
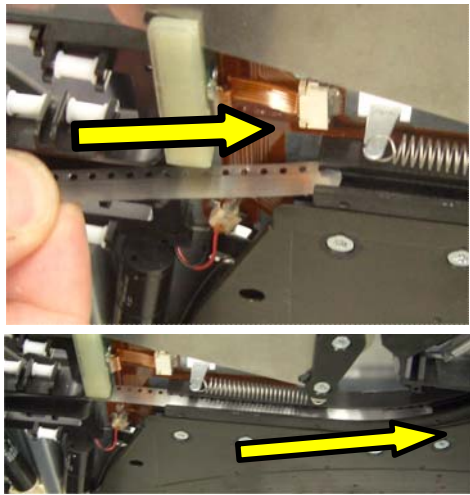


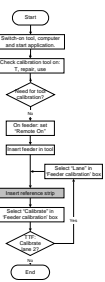
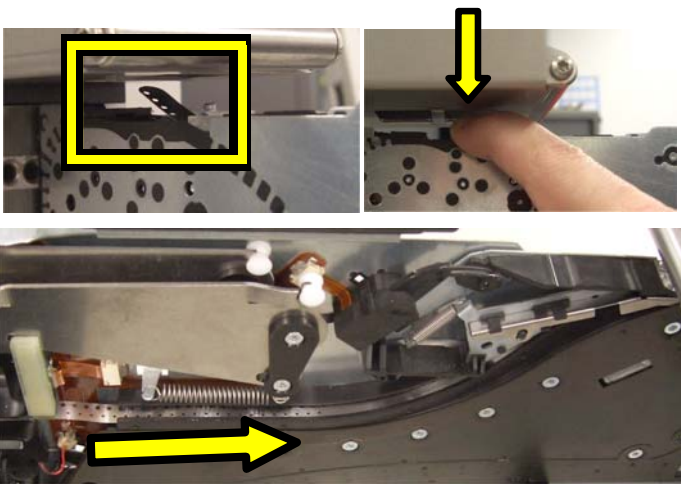
TTF-00027.fm

 <pre> graph TD Start([Start]) --> Switch[Switch on tool computer and start application] Switch --> Check[Check calibration tool icon in menu bar] Check --> DoubleClick{Double click} DoubleClick --> OnFeeder{On feeder or Remote On?} OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> SelectLibrary[Select Library in Feeder calibration tool] SelectLibrary --> SelectCalibrator[Select Calibrator in Feeder calibration tool] SelectCalibrator --> Confirm{Confirm} Confirm --> End([End]) </pre>	<p>•Double click "ITF-TTF calibration tool" icon.</p>	 <p>The screenshot shows the 'ITF-TTF Calibration Tool' window. It has a blue title bar and a dark blue background with a white crosshair icon. Below the icon, the text 'ITF-TTF Calibration Tool' is displayed. The window contains several sections: 'Feeder Status' with fields for Feeder type, Serial number, Software version, and Cycle counter; 'Feeder Calibration' with a 'CALIBRATE' button and radio buttons for 'Upper lane (Lane 1)' and 'Lower lane (Lane 2)'; 'Tool Setting' with a 'Last tool calibration' field and a 'Calibrate' button; and a 'Message' section with a text box containing 'Insert feeder'. There are also 'Open', 'Close', 'Print', 'Config', 'About', and 'Help' buttons at the top, and an 'EXIT' button at the bottom left.</p>																		
 <pre> graph TD Start([Start]) --> Switch[Switch on tool computer and start application] Switch --> Check[Check calibration tool icon in menu bar] Check --> DoubleClick{Double click} DoubleClick --> OnFeeder{On feeder or Remote On?} OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> SelectLibrary[Select Library in Feeder calibration tool] SelectLibrary --> SelectCalibrator[Select Calibrator in Feeder calibration tool] SelectCalibrator --> Confirm{Confirm} Confirm --> End([End]) </pre>	<p>•Check tool calibration</p>	<table border="1"> <thead> <tr> <th>What</th><th>Yes</th><th>No</th></tr> </thead> <tbody> <tr> <td>First time use?</td><td></td><td></td></tr> <tr> <td>Ambient T > 3°C after last calibration?</td><td></td><td></td></tr> <tr> <td>Change of camera(s)?</td><td></td><td></td></tr> <tr> <td>Crash or accident?</td><td></td><td></td></tr> <tr> <td>Need for tool calibration?</td><td></td><td></td></tr> </tbody> </table>	What	Yes	No	First time use?			Ambient T > 3°C after last calibration?			Change of camera(s)?			Crash or accident?			Need for tool calibration?		
What	Yes	No																		
First time use?																				
Ambient T > 3°C after last calibration?																				
Change of camera(s)?																				
Crash or accident?																				
Need for tool calibration?																				
 <pre> graph TD Start([Start]) --> Switch[Switch on tool computer and start application] Switch --> Check[Check calibration tool icon in menu bar] Check --> DoubleClick{Double click} DoubleClick --> OnFeeder{On feeder or Remote On?} OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> SelectLibrary[Select Library in Feeder calibration tool] SelectLibrary --> SelectCalibrator[Select Calibrator in Feeder calibration tool] SelectCalibrator --> Confirm{Confirm} Confirm --> End([End]) </pre>	<p>•Set feeder to remote</p>	 <p>The diagram shows a robotic arm holding a feeder. A yellow circle highlights a button on the arm. A yellow arrow points from this button to a remote control. The remote control has a 'Remote' switch with 'ON' and 'OFF' positions. Below the switch are three buttons labeled '4 mm', '2 mm', and '2 mm'.</p>																		

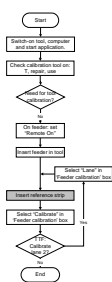
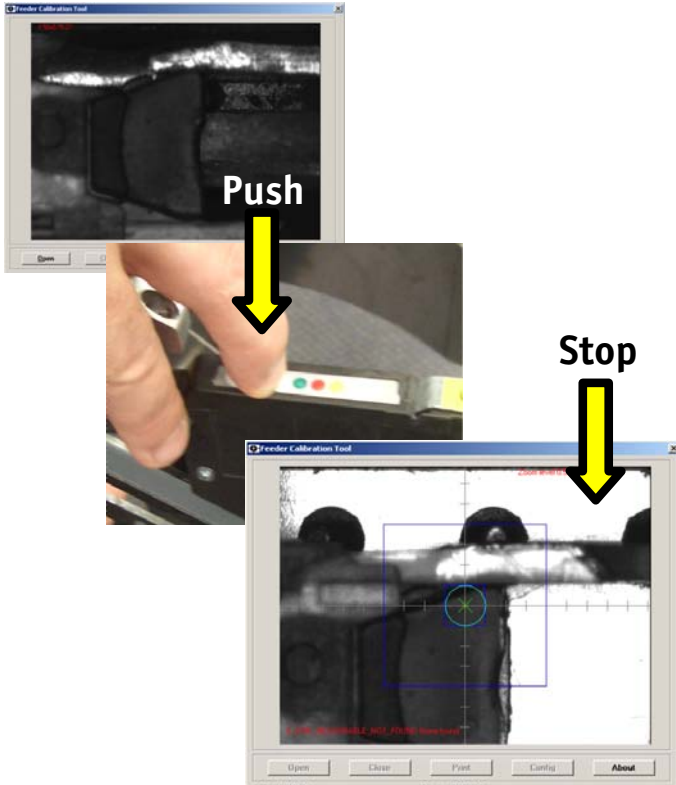
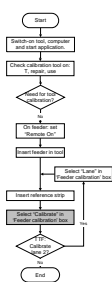

TTF-00027.fm

<pre> graph TD Start([Start]) --> SwitchOn[Switch on the computer and test application] SwitchOn --> CheckCalib[Check calibration test on 1. report unit] CheckCalib --> IsCalib{Is calibration OK?} IsCalib -- No --> OnFeeder[On feeder unit 'Warning OK'] OnFeeder --> SelectTune[Select 'Tune' in Feeder calibration box] SelectTune --> InsertStrip[Insert reference strip] InsertStrip --> SelectCalib[Select 'Calibration' in Feeder calibration box] SelectCalib --> IsCalib2{Is calibration OK?} IsCalib2 -- No --> OnFeeder IsCalib2 -- Yes --> End([End]) </pre>	<ul style="list-style-type: none"> •Determine right position •The TTF must be on 8 mm feeder position 	
<pre> graph TD Start([Start]) --> SwitchOn[Switch on the computer and test application] SwitchOn --> CheckCalib[Check calibration test on 1. report unit] CheckCalib --> IsCalib{Is calibration OK?} IsCalib -- No --> OnFeeder[On feeder unit 'Warning OK'] OnFeeder --> SelectTune[Select 'Tune' in Feeder calibration box] SelectTune --> InsertStrip[Insert reference strip] InsertStrip --> SelectCalib[Select 'Calibration' in Feeder calibration box] SelectCalib --> IsCalib2{Is calibration OK?} IsCalib2 -- No --> OnFeeder IsCalib2 -- Yes --> End([End]) </pre>	<ul style="list-style-type: none"> •Insert feeder in position 	
<pre> graph TD Start([Start]) --> SwitchOn[Switch on the computer and test application] SwitchOn --> CheckCalib[Check calibration test on 1. report unit] CheckCalib --> IsCalib{Is calibration OK?} IsCalib -- No --> OnFeeder[On feeder unit 'Warning OK'] OnFeeder --> SelectTune[Select 'Tune' in Feeder calibration box] SelectTune --> InsertStrip[Insert reference strip] InsertStrip --> SelectCalib[Select 'Calibration' in Feeder calibration box] SelectCalib --> IsCalib2{Is calibration OK?} IsCalib2 -- No --> OnFeeder IsCalib2 -- Yes --> End([End]) </pre>	<p>Take correct reference strip:</p> <ul style="list-style-type: none"> •For TTF release 1.0: marked with 'TTF', 'TTF P2' or 'TTF P4'. •For TTF release 1.1: marked with 'TTF P2'. 	
<pre> graph TD Start([Start]) --> SwitchOn[Switch on the computer and test application] SwitchOn --> CheckCalib[Check calibration test on 1. report unit] CheckCalib --> IsCalib{Is calibration OK?} IsCalib -- No --> OnFeeder[On feeder unit 'Warning OK'] OnFeeder --> SelectTune[Select 'Tune' in Feeder calibration box] SelectTune --> InsertStrip[Insert reference strip] InsertStrip --> SelectCalib[Select 'Calibration' in Feeder calibration box] SelectCalib --> IsCalib2{Is calibration OK?} IsCalib2 -- No --> OnFeeder IsCalib2 -- Yes --> End([End]) </pre>	<ul style="list-style-type: none"> •Pre-form the reference strip according to routing path along sprocket wheel 	

TTF-00027.fm

	<p>•Insert reference strip in correct lane</p>	
	<p>•Select correct lane on feeder</p>	
	<p>•Push strip down and in, until it stops against the sprocket wheel</p>	

TTF-00027.fm

	<ul style="list-style-type: none">•Forward reference strip until visible on screen	
	<ul style="list-style-type: none">•Select "calibrate"	
	<ul style="list-style-type: none">•When the sprocket wheel is turning in the wrong direction, and the calibration strip cannot pass the sprocket wheel, check the configuration of the feeder (that parts match with feeder version), see 4.5.3 Configuration check TTF .	
	<ul style="list-style-type: none">•When a message 'Feeder synchronisation failed' pops up, check the configuration of the feeder (that parts match with feeder version), see 4.5.3 Configuration check TTF .	

	<p>•Follow calibration</p>	
	<p>•Remove reference strip</p>	<p>and</p>
	<p>•Check calibration date and values. •If 'red' check 'Adjust sensor', exchange 'sprocket wheel', exchange 'index motor'.</p>	<p>No RED = OK</p>

TTF-00027.fm

Start

Install the tool, connect it and start application

Check calibration tool on 1st lane only

Is it OK?

Yes

On feeder can be used

Insert reference strip

Insert reference strip

Select 'Calibrate' in Feeder calibration box

Is it OK?

Yes

End

- For TTF, select lane 2, start with 'Insert reference strip'

OpenClosePrintConfigAbout

Feeder Status

Feeder typeTTF R1.0

Serial number1005438

Software version3.4

Cycle counter11278

Feeder Calibration

CALIBRATECANCEL

☒ Upper lane (Lane 1)

☐ Lower lane (Lane 2)

Tool Setting

Last tool calibration02/01/2006

Calibrate

Help

Message

Insert reference strip in upper lane and press CALIBRATE button

TTF-00027.fm

4.8 Administration TTF

4.8.1 Administration procedure

An administration of the repair process can help to determine e.g.; cost of feeders, lifetime of feeders, order list for feeder spare parts, maintenance intervals, repeatedly of specific problems and more.

It is recommended to:

- Fill out an Administration sheet (See [4.8.2 Administration sheet](#) for an example, delivered on the feeder service shop CD) after each step of the repair process.
- Store the sheet in e.g. a feeder service database.

Information from the ITF-TTF Analysis tool has to be filled out by hand. The tool does not keep any record of the tests.

Information from the ITF-TTF Calibration tool is presented as a 'Calibration form' on screen (See [4.8.3.1 Form example and explanation](#)) and stored in files in a text format (See [4.8.3.4 Store calibration data](#))

4.8.2 Administration sheet

- Fill out this form after each step in the repair process.
- It can be used for administrative purposes.


Inspection		Assembleon Feeder Repair		Twin Tape Feeder			
1. Visual Inspection							
		NOK		NOK			
Reel Holder	Reel Clamp	-	Top Foil Unit	Transport Roll present	-		
	Disk Cam Brake	-	Nozzle Catch	Movement Nozzle Catch UL	-		
Buffers	Buffer Arm movement	-	Peel-Off Unit	Movement Nozzle Catch LL	-		
	Buffer Rollers present	-		Movement Handle	-		
	Complete Lever Guide	-		Wire Spring present	-		
Interface	Contact Pins present	-	Remarks:				
2. Administration Feeder Number & Upper Lane & Lower Lane Counter & Software Version (note on other side)							
3. Functional Test 1:			5. Functional Test 2:				
			Upper Lane Lower Lane				
1	Control board	EEPROM parameters	-	1	Control board	EEPROM parameters	-
2	Power supply	Power supply current	-	2	Power supply	Power supply current	-
3	Select/busy line	Internal wiring	-	3	Select/busy line	Internal wiring	-
4		External connection	-	4		External connection	-
5	Human interface	Backward button	-	5	Human interface	Backward button	-
6		Forward Button	-	6		Forward Button	-
7		Lane Button	-	7		Lane Button	-
8		LEDs	-	8		LEDs	-
9	Pull handle	Lock / unlock	-	9	Pull handle	Lock / unlock	-
10	Configuration switches	Remote switch	-	10	Configuration switches	Remote switch	-
11		Local mode pitch switch	-	11		Local mode pitch switch	-
12	Peeloff unit	Motor current	-	12	Peeloff unit	Motor current	-
13		Buffer sensors	-	13		Buffer sensors	-
14	Nozzle detections	LED current	-	14	Nozzle detections	LED current	-
15	Index unit	Motor current forward	-	15	Index unit	Motor current forward	-
16	Sprocket wheel	Tooth sequence	-	16	Sprocket wheel	Tooth sequence	-
17		Min / max tooth pitch	-	17		Min / max tooth pitch	-
18		Min / max tooth width	-	18		Min / max tooth width	-
4. Repair Feeder							
5. Repeat Functional Test, Fill in Test 2.							
6. Fill in corrective actions and replaced parts on next sheet							
					OK	NOK	
					-	-	
7. Calibrate feeder							
8. Pack feeder							
TTF Corrections PA 2657/00							
Work-order number:		-	Counter Upper Lane:		-	Date	-
Feeder number:		-	Counter Lower Lane:		-	SW Ver	-
Repair number		-	RMA Number		-		
1. Parts							
Description:		Quantity:	Description:		Quantity:	Description:	
A	Nozzle Catch Assy LL	-	V	Lever UL Assy	-	J	Peel-off-unit Compleet
B	Nozzle Catch Assy UL	-	W	Lever LL Assy	-		Peel-Off Handle Assy
C	Sprocket Wheel Assy	-	R	Guide Block TTF	-		Peel-Off Module Assy Kunstof
D	Contact Block Assy	-	Y	Buffer Tension Spring	-		Peel-Off Motor Assy (motor)
E	Cable Assy	-	O	Human Interface TTF	-	K	Inductive Sensor D3 TTF
F	Lever Guide Assy	-	P	Assy Micro Switch	-	L	Print Controller TTF
G	Top Foil Unit TTF	-	Q	Top Plate	-	M	Print Nozzle Catch
H	Reel Clamp One Sided	-				N	Print Procket Sensor
I	Sprocket Motor TTF	-				U	Middle Plate TTF
S	Rotating Arm Long (UL)	-					
T	Lower Reel Holder	-					
2. Operations / Actions							
Description		Applicable					
Load new software version		-					
Adjust Index sensor LL		-					
Adjust Index sensor UL		-					
Clean Feeder		-					
Calibrate Feeder		-					
Adjust Switch Block		-					
3. Delivery settings							
Description							
Set switches for delivery settings							

Figure 34 Administration sheet

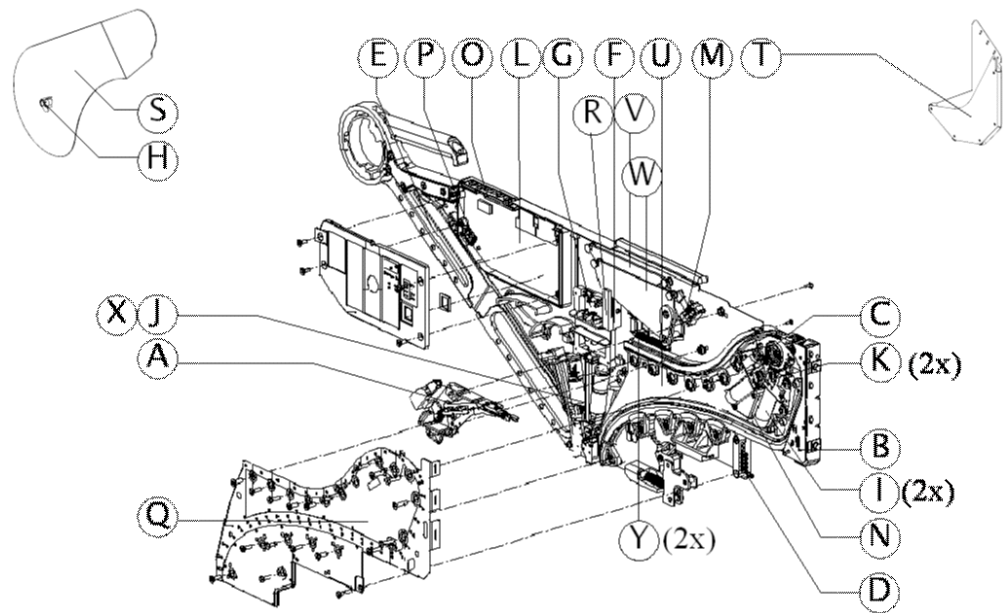


Figure 35

TTF-00028.fm

4.8.3 TTF calibration form

After a calibration the calibration form is directly shown on screen.

Explanation of all fields in the form, see [4.8.3.1 Form example and explanation](#)

To see a form from an other calibration, see [4.8.3.2 Retrieve a calibration form](#)

To print the form, see [4.8.3.3 Print a calibration form](#)

To store the form in e.g. a feeder service database, see [4.8.3.4 Store calibration data](#)

4.8.3.1 Form example and explanation

There are 2 different calibration forms depending on the version of the TTF.

■ Calibration form TTF R1.0

Calibration Form		Feeder Nr.	1 1001643
Tool Calibration Parameters			
Tool number	DC000603		
Ref feeder number	3 DC000603		
Date	25/05/2007		
Time	09:41:05		
Upper Lane Values			
Cycle count	441		
Date	25/05/07		
Time	4 09:53:08		
Tooth Position	Y Correction [dec]	Y Deviation [um]	
1	16	6	
2	16	-30	
3	16	-70	
4	16	-126	
5	16	-48	
6	16	-61	
7	16	5	
8	16	-16	
9	16	-61	
10	16	6	
11	16	-20	
12	16	-3	
13	16	64	
14	16	33	
15	16	30	
16	16	128	
17	16	71	
18	16	67	
19	16	51	
20	16	63	
21	16	34	
22	16	33	
23	16	-4	
24	16	-75	
Feeder Parameters			
Type	TTF R1.0		
SW Version	2 3.5		
HW Version	1.0		
Pitch [mm]	4		
Lower Lane Values			
Cycle count	411		
Date	25/05/07		
Time	4 10:04:55		
Tooth Position	Y Correction [dec]	Y Deviation [um]	
1	-29	38	
2	-29	-10	
3	-29	25	
4	-29	22	
5	-29	28	
6	-29	8	
7	-29	20	
8	-29	-2	
9	-29	27	
10	-29	18	
11	-29	18	
12	-29	23	
13	-29	7	
14	-29	-25	
15	-29	-18	
16	-29	-15	
17	-29	-41	
18	-29	-1	
19	-29	-15	
20	-29	-6	
21	-29	-1	
22	-29	31	
23	-29	-8	
24	-29	4	

Figure 36 Calibration form TTF R1.0

1. Feeder No. The serial number of the feeder that is calibrated.
2. Feeder parameters
 - Type The type of TTF.
 - SW version The software version present in the feeder.
 - HW version The hardware version of the feeder controller board.
 - Pitch The pith stored in the feeder at time of the feeder calibration.
3. Tool calibration parameters
 - Tool number DC number of the calibration tool applicable at the time of the Upper lane calibration.

- Ref feeder numberDC number of the reference feeder used at the last calibration tool calibration.
 - DateDate of the last calibration tool calibration applicable at the time of the Upper lane calibration.
 - TimeTime of the last calibration tool calibration applicable at the time of the Upper lane calibration.
4. Lower/upper lane values
- Cycle count (UL/LL).Number of cycles performed by the feeder lane before feeder lane calibration.
 - Date (UL/LL)Date of the feeder lane calibration.
 - Time (UL/LL)Time of the feeder lane calibration.
 - Tooth positionPosition number of each individual tooth of the sprocket wheel.
 - Y Correction (dec)Average correction value in encoder pulses.
 - Y Deviation (μm).Deviation from the nominal position measured after calibration. If the deviation exceeds the reject limit, the field will turn 'Red'.
To see the reject limits;
- Select 'Config' in the 'Feeder calibration tool'.
- In the 'Reject limit' box, select applicable feeder type.
- The reject limit is shown in the 'Y (μm)' box.

■ Calibration form TTF R1.1

Calibration Form		Feeder Nr.	1 1016224
Tool Calibration Parameters			
Tool number	3	DC000603	
Ref feeder number		DC000603	
Date		04/05/2007	
Time		15:55:40	
Upper Lane Values			
Cycle count		3011	
Date		25/07/2007	
Time		11:30:58	
Index	Y Correction [cnts]	Y Deviation [um]	
1	-17	-3	
2	-22	11	
3	-20	5	
4	-23	-7	
5	-19	-4	
6	-20	6	
7	-19	6	
8	-21	10	
9	-25	1	
10	-26	2	
11	-25	2	
12	-27	-5	
13	-24	1	
14	-14	-4	
15	-18	-1	
16	-17	-2	
17	-20	-11	
18	-14	10	
19	-13	-0	
20	-15	1	
21	-16	-9	
22	-22	-6	
23	-22	-6	
24	-19	4	
25	-18	-2	
26	-22	4	
27	-26	-10	
28	-21	0	
29	-19	-4	
30	-21	12	
31	-23	0	
32	-28	-12	
33	-27	4	
34	-30	9	
35	-34	-9	
36	-24	3	
37	-24	4	
38	-19	1	
39	-20	-0	
40	-28	-1	
41	-29	5	
42	-29	-7	
43	-26	-8	
44	-17	0	
45	-18	-6	
46	-14	-7	
Feeder Parameters			
Type		TTF R1.1	
SW Version	2	4.9	
HW Version		0.6	
Pitch [mm]		2	
Lower Lane Values			
Cycle count		3025	
Date		25/07/2007	
Time		11:36:56	
Index	Y Correction [cnts]	Y Deviation [um]	
1	57	-2	
2	53	-15	
3	52	4	
4	50	-21	
5	49	-10	
6	55	5	
7	55	-5	
8	59	7	
9	57	6	
10	53	5	
11	51	2	
12	54	-1	
13	45	-2	
14	46	-7	
15	49	10	
16	53	-3	
17	57	2	
18	59	-8	
19	60	-12	
20	62	-5	
21	55	0	
22	50	3	
23	51	-8	
24	54	-8	
25	55	-3	
26	54	3	
27	54	2	
28	55	-5	
29	55	2	
30	54	-15	
31	53	-5	
32	52	-9	
33	45	2	
34	51	-1	
35	58	11	
36	60	4	
37	53	-10	
38	53	-5	
39	51	-11	
40	54	1	
41	54	-9	
42	56	-7	
43	56	-11	
44	58	-12	
45	56	-1	
46	54	-12	

Figure 37 Calibration form TTF R1.1

1. Feeder no. The serial number of the feeder that is calibrated.
2. Feeder parameters
 - Type The type of TTF.
 - SW version The software version present in the feeder.
 - HW version The hardware version of the feeder controller board.
 - Pitch The pith stored in the feeder at time of the feeder calibration.
3. Tool calibration parameters
 - Tool number DC number of the calibration tool applicable at the time of the Upper lane calibration.
 - Ref feeder number DC number of the reference feeder used at the last calibration tool calibration.
 - Date Date of the last calibration tool calibration applicable at the time of the Upper lane calibration.
 - Time Time of the last calibration tool calibration applicable at the time of the Upper lane calibration.
4. Lower/upper lane values
 - Cycle count (UL/LL). Number of cycles performed by the feeder lane before feeder lane calibration.
 - Date (UL/LL) Date of the feeder lane calibration.

- Time (UL/LL)Time of the feeder lane calibration.
- Index position.Index position number. The distance between 2 index positions is 2mm.
- Y Correction (cnts)Average correction value in encoder counts.
- Y Deviation (μm).Deviation from the nominal position measured after calibration.
If the deviation exceeds the reject limit, the field will turn 'Red'. To see the reject limits;
 - Select 'Config' in the 'Feeder calibration tool'
 - In the 'Reject limit' box, select the applicable feeder type.
 - The reject limit is shown in the 'Y (μm)' box.

4.8.3.2 Retrieve a calibration form

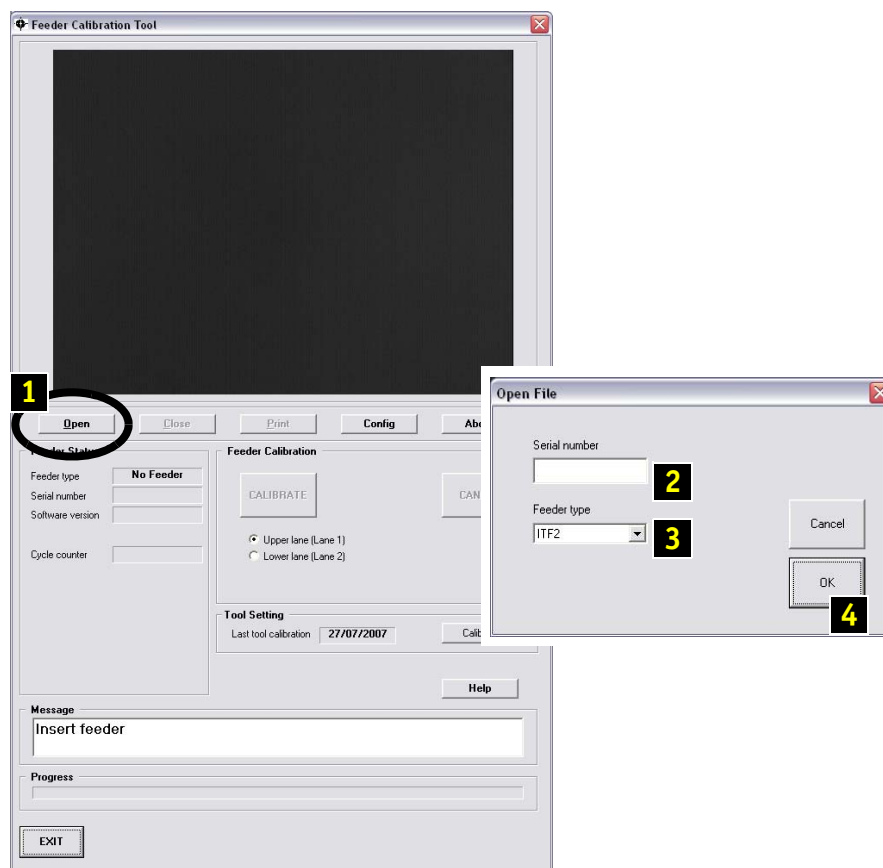


Figure 38

1. Select 'Open' in the 'Feeder calibration tool'.
2. Type in the serial number in the feeder.
3. Select the applicable feeder type.
4. Select OK.

4.8.3.3 Print a calibration form



Figure 39 Feeder calibration tool

A calibration form must be visible on screen.

A printer must be connected to the calibration tool computer.

Select "Print" in the 'Feeder calibration tool

4.8.3.4 Store calibration data

Open the explorer on the calibration tool.

Go to C:\Calibration data\TTF10\ (TTF11 for ITF 1.1 calibration data)

Copy the file 'Feeder calibration .txt'.

Store the copied file to a USB-stick ore network location for storage in e.g. a feeder service database.



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Integrated electronics manufacturing solutions



Spare Parts Overview

Intelligent Tape Feeder and Twin Tape Feeder

Document	Spare Parts Overview Intelligent Tape Feeder and Twin Tape Feeder
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Supplied with.	PA 1124/00

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Spare Parts Overview

Intelligent Tape Feeder and Twin Tape Feeder

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CHAPTER 1 Introduction

This is the complete spare parts overview of the intelligent tape feeder (all widths and all versions) and the twin tape feeder (all versions), conveniently brought together in one document.

CHAPTER 2 Intelligent Tape Feeder

2.1 Module Overview

The spare parts detailed in CHAPTER 2.3 are divided into the following modules

[chapter 2.3.1 "Complete Feeders \(new and repaired\)"](#)

[chapter 2.3.2 "Control Unit "](#)

[chapter 2.3.3 "Reel Holders "](#)

[chapter 2.3.4 "Topfoil Peel-off Assembly "](#)

[chapter 2.3.5 "Clamping Lever"](#)

[chapter 2.3.6 "Sprocket Mechanism "](#)

[chapter 2.3.7 "Base Plate"](#)

[chapter 2.3.8 "Tape Run-in Guide "](#)

[chapter 2.3.9 "Top Foil and Top Guide"](#)

[chapter 2.3.10 "Pick Position "](#)

[chapter 2.3.11 "Tape Run-out Guides "](#)

[chapter 2.3.12 "Side Plate"](#)

2.2 Repair

Local Repair:

For approximately 90% of the parts it is possible to repair the feeder locally without the need of special equipment. However, not all parts are mentioned in the following pages. The parts mentioned here are the parts likely to get damaged or lost during production or repair actions.

Central Repair:

- a) Assembléon offers central repair if local repair is not possible.
- b) Central repair comes with the following conditions:
 - Feeder must be packed properly. Damage caused by transport will not be repaired.
 - Feeders must be complete. No parts should be missing.

Customized Repair:

With customized repair, the feeder will be returned to the originator with the shortest possible repair time. The feeder will be functionally repaired and all customer improvements, identifications will remain untouched (unless it is noticed that this has negative influence on the feeder performance). Customized repair is cheaper than Swap Repair.

Swap Repair:

This is refurbished repair. Within the delivery agreements of the regions, a defective feeder is replaced by a refurbished feeder. All customized improvements, identifications are removed from these feeders. The feeders represent a correct functioning feeder of the same level as the corresponding PA#. The contents of these feeders is exactly as the contents of the PA#.

Feeders returned for Customized and Swap repair can be returned via normal channels.

2.3 Spare Parts Lists

The fields in the spare parts list have the following meaning:

Item No.:	Position Identification.
Part of Item No.:	Module the part belongs to.
Ordering Code:	The ordering code at Assembléon.
Description:	Description of the article.
Quantity per module:	<p>The quantity of the part in one module. Because this manual covers all ITF feeders, all separate widths and versions are mentioned.</p> <p>Width and version is indicated by the PA number of the feeder (see also FIGURE 1):</p> <ul style="list-style-type: none"> •First four digits of PA number indicate the type of feeder (intelligent tape feeder). •Second to last digit of PA number indicates the width of the feeder. •Last digit of PA number indicates the version of the feeder. <p>The PA number can be located according to FIGURE 1.</p>
Remarks:	<p>1.Comment or specific information.</p> <p>2.Standard Packing Unit: Minimum packing quantity received at ordering.</p>



NOTE: There are no consumables

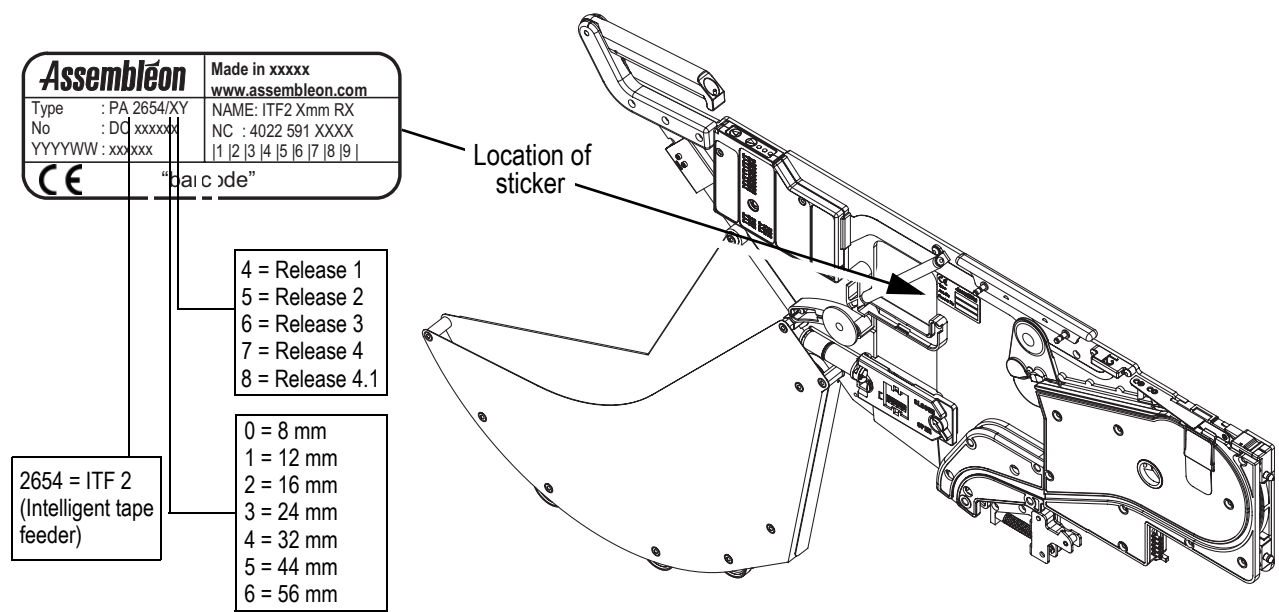
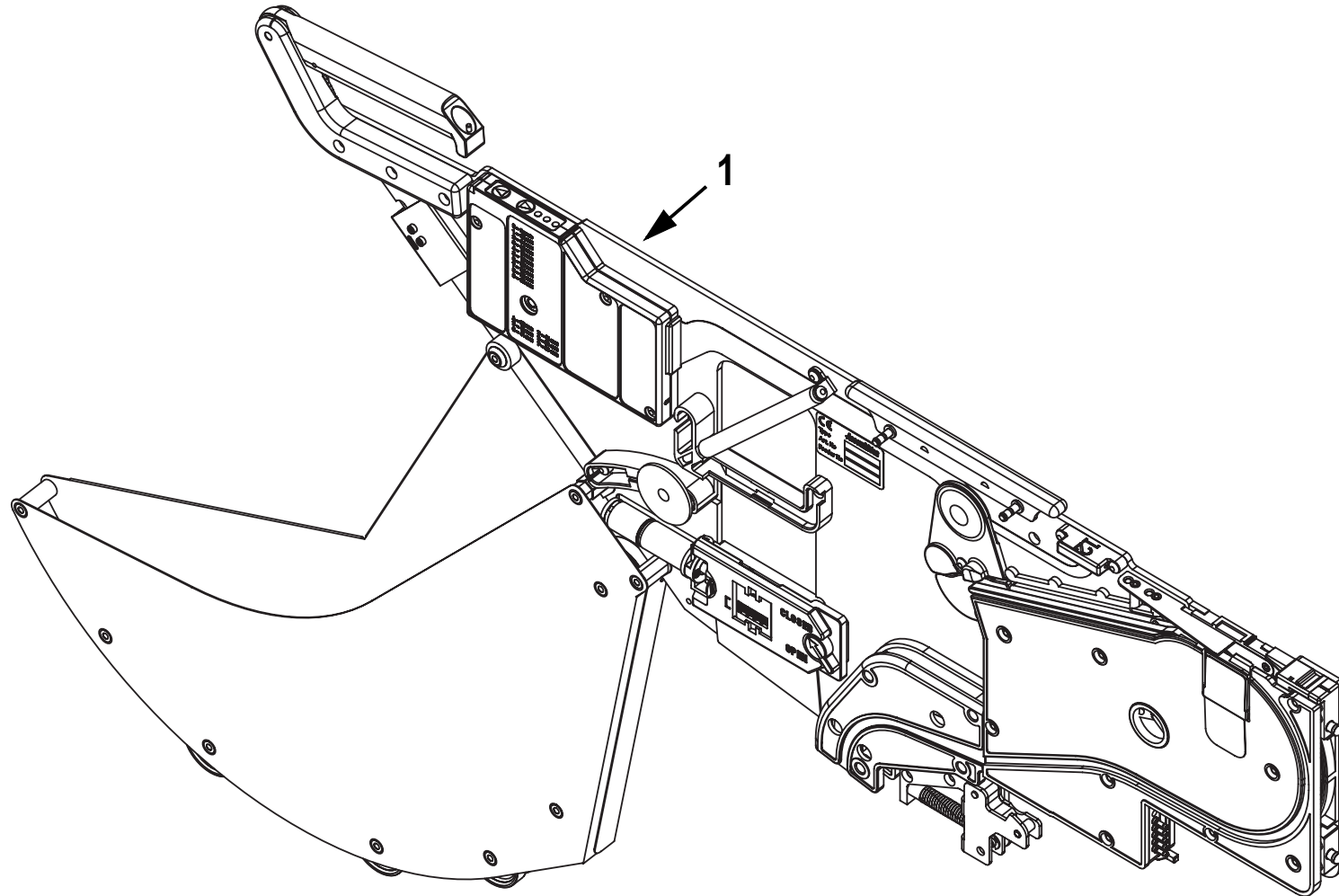


FIGURE 1

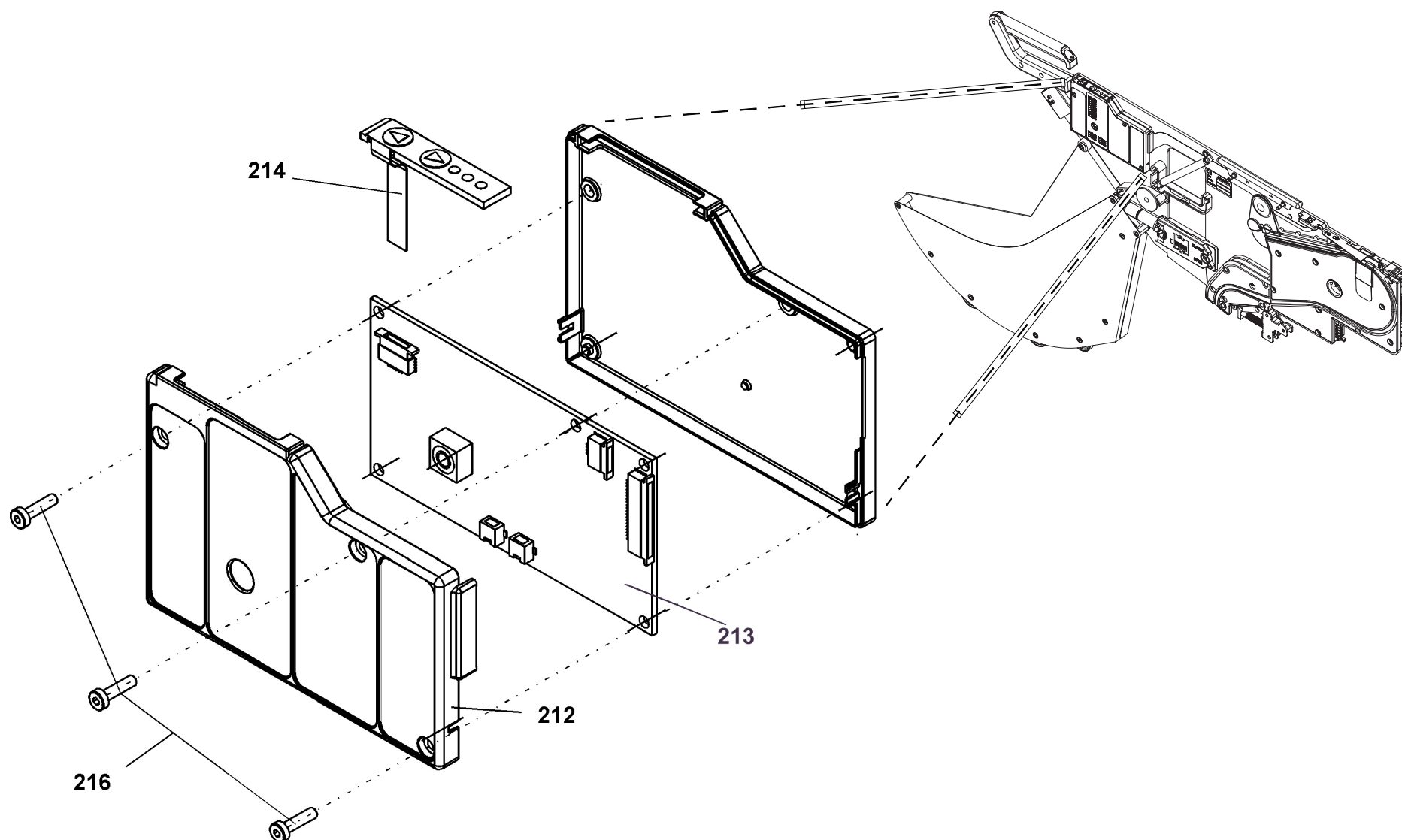
2.3.1 Complete Feeders (new and repaired)



Current spare parts list, see <http://espareas.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm)	PA number of feeder width
				8	12	16	24	32	44	56		
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Complete Feeders (new and repaired)											Remarks	
1	-	9498 396 01933	ITF2 8mm R4.1	1							PA2654/x8: new feeder	
1	-	9498 396 01934	ITF2 12mm R4.1		1						PA2654/x8: new feeder	
1	-	9498 396 01935	ITF2 16mm R4.1			1					PA2654/x8: new feeder	
1	-	9498 396 01936	ITF2 24mm R4.1				1				PA2654/x8: new feeder, standard delivered with 13" reel holder assembly	
1	-	9498 396 01937	ITF2 32mm R4.1					1			PA2654/x8: new feeder	
1	-	9498 396 01938	ITF2 44mm R4.1						1		PA2654/x8: new feeder	
1	-	9498 396 01939	ITF2 56mm R4.1							1	PA2654/x8: new feeder	
1	-	9498 398 01933	ITF2 8mm R4.1 cust rep	1							PA2654/x8: customized repaired feeder	
1	-	9498 398 01934	ITF2 12mm R4.1 cust rep		1						PA2654/x8: customized repaired feeder	
1	-	9498 398 01935	ITF2 16mm R4.1 cust rep			1					PA2654/x8: customized repaired feeder	
1	-	9498 398 01936	ITF2 24mm R4.1 cust rep				1				PA2654/x8: customized repaired feeder	
1	-	9498 398 01937	ITF2 32mm R4.1 cust rep					1			PA2654/x8: customized repaired feeder	
1	-	9498 398 01938	ITF2 44mm R4.1 cust rep						1		PA2654/x8: customized repaired feeder	
1	-	9498 398 01939	ITF2 56mm R4.1 cust rep							1	PA2654/x8: customized repaired feeder	
1	-	9498 398 01278	ITF2 24mm R4.0 cust rep				1				PA2654/x7: customized repaired feeder	
1	-	9498 398 01279	ITF2 32mm R4.0 cust rep					1			PA2654/x7: customized repaired feeder	
1	-	9498 398 01280	ITF2 44mm R4.0 cust rep						1		PA2654/x7: customized repaired feeder	
1	-	9498 398 01281	ITF2 56mm R4.0 cust rep							1	PA2654/x7: customized repaired feeder	
1	-	9498 398 00283	ITF2 8mm R3 cust rep	1							PA2654/x6: customized repaired feeder	
1	-	9498 398 00284	ITF2 12mm R3 cust rep		1						PA2654/x6: customized repaired feeder	
1	-	9498 398 00285	ITF2 16mm R3 cust rep			1					PA2654/x6: customized repaired feeder	
1	-	9498 398 00286	ITF2 24mm R3 cust rep				1				PA2654/x6: customized repaired feeder	
1	-	9498 398 00287	ITF2 32mm R3 cust rep					1			PA2654/x6: customized repaired feeder	
1	-	9498 398 00288	ITF2 44mm R3 cust rep						1		PA2654/x6: customized repaired feeder	
1	-	9498 398 00289	ITF2 56mm R3 cust rep							1	PA2654/x6: customized repaired feeder	

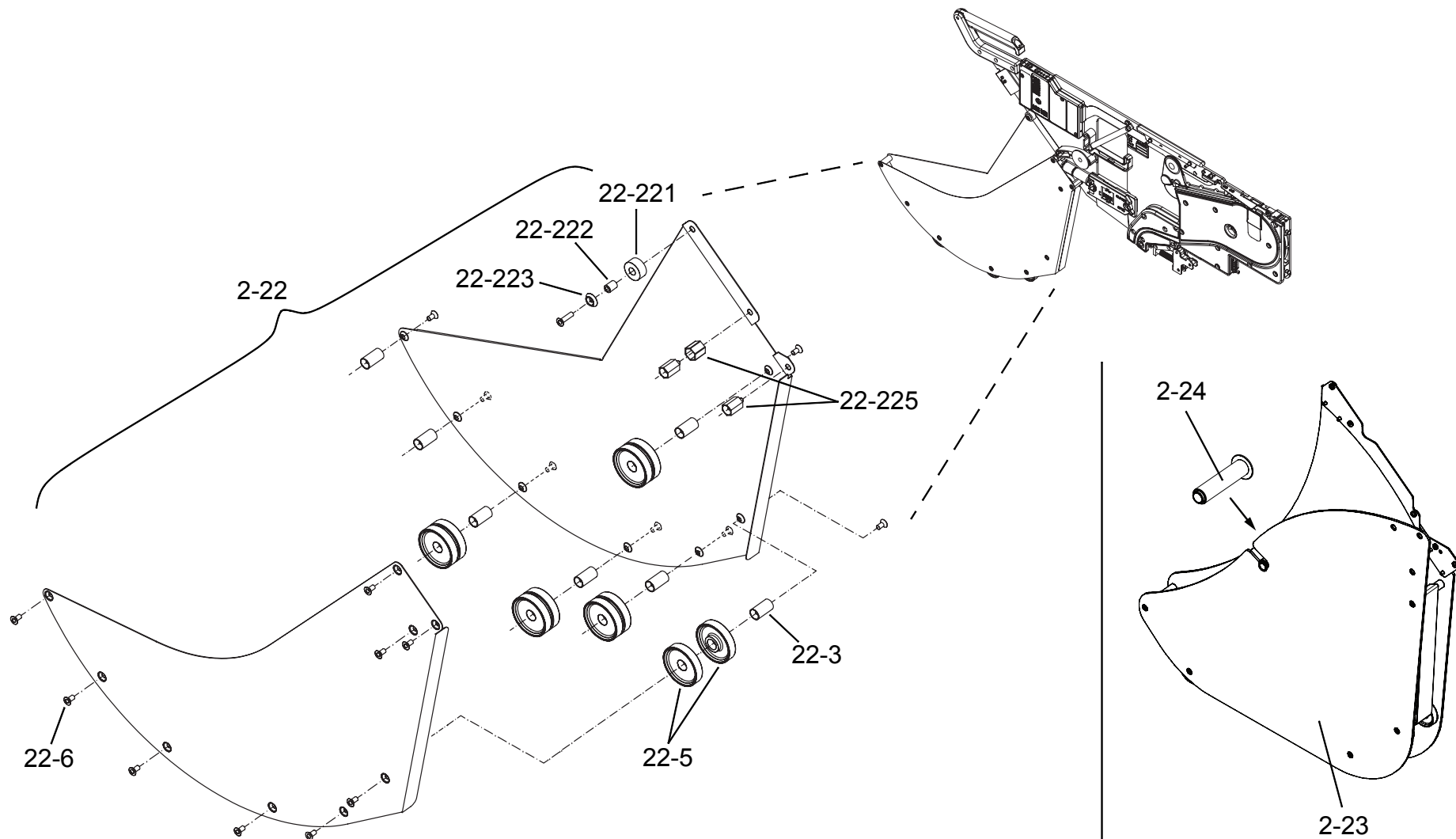
2.3.2 Control Unit



Current spare parts list, see <http://espare.assembleon.com>

Current spare parts list, see http://espare.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width
				8	12	16	24	32	44	56	
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y	Remarks
Control Unit											
212	-	9498 396 00371	PCB front plate	1	1	1	1	1	1	1	
213	-	4022 594 10010	PCB controller 8 mm	1							
213	-	4022 594 10020	PCB controller 12-56 mm		1	1	1	1	1	1	
214	-	5322 216 04621	User interface	1	1	1	1	1	1	1	
216	-	5322 502 21213	Torx screw M3x12	3	3	3	3	3	3	3	Standard packing unit: 25

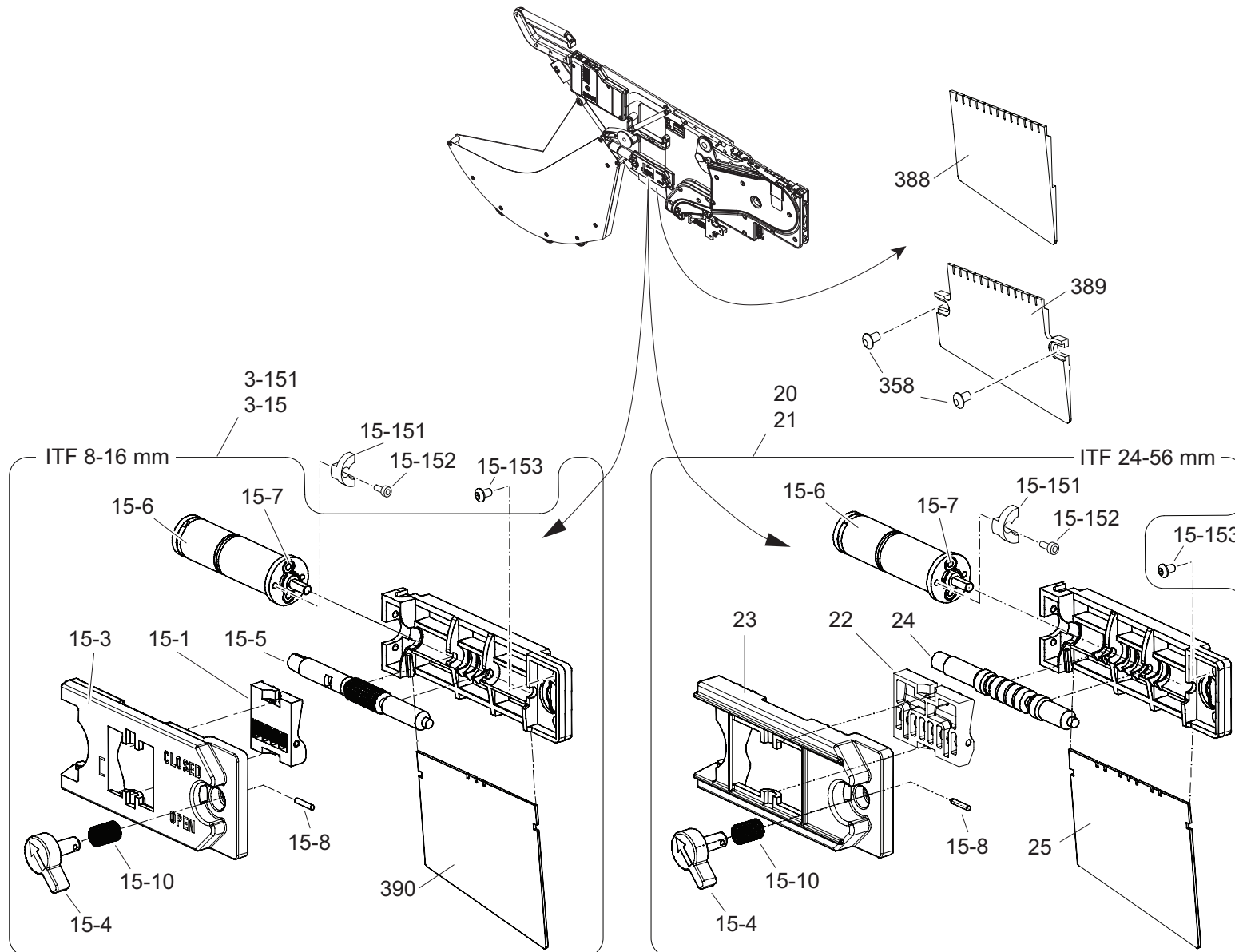
2.3.3 Reel Holders



Current spare parts list, see <http://espares.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width	
				8	12	16	24	32	44	56		
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Reel Holder											Remarks	
2-22	-	5322 256 10513	13" Reel Holder Assy, 8mm	1							The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
2-22	-	5322 256 10514	13" Reel Holder Assy, 12mm		1						The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
2-22	-	5322 256 10515	13" Reel Holder Assy, 16mm			1					The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
2-22	-	5322 256 10516	13" Reel Holder Assy, 24mm				1				The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
2-22	-	5322 256 10517	13" Reel Holder Assy, 32mm					1			Only for PA2654/x6 and older. The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
2-22	-	5322 256 10518	13" Reel Holder Assy, 44mm						1		Only for PA2654/x6 and older. The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
2-22	-	5322 256 10519	13" Reel Holder Assy, 56mm							1	Only for PA2654/x6 and older. The complete 13" Reel Holder Assembly will be delivered without the fastening items: 22-221, 22-222, 22-223, 22-224 and 22-225	
22-6	2-22	5322 502 21599	Csk scr Stl St M3x6	16	16	16	16	16	16	16	Only for 13 inch reel holderStandard packing unit: 25 8-24 mm: for all releases, 32-56 mm: only for PA2654/x6 and older	
22-3	-	4022 516 05350	Connection Nut	1							Only for 13 inch reel holderStandard packing unit: 25 8-24 mm: for all releases, 32-56 mm: only for PA2654/x6 and older	
22-5	-	4022 516 06010	Roller	1							Only for 13 inch reel holderStandard packing unit: 25 8-24 mm: for all releases, 32-56 mm: only for PA2654/x6 and older	
22-221	-	4022 516 05810	Roller	1	1	1	1	1	1	1	Only for 13 inch reel holderStandard packing unit: 25 8-24 mm: for all releases, 32-56 mm: only for PA2654/x6 and older	
22-222	-	4022 538 77200	Distance bush	1	1	1	1	1	1	1	Only for 13 inch reel holderStandard packing unit: 25 8-24 mm: for all releases, 32-56 mm: only for PA2654/x6 and older	
22-223	-	2522 022 29002	Screw ST 2N M3x12	1	1	1	1	1	1	1	Only for 13 inch reel holderStandard packing unit: 25 8-24 mm: for all releases, 32-56 mm: only for PA2654/x6 and older	
22-225	-	4022 516 05420	Spacer	1							Only for 13 inch reel holder	
2-23	-	9498 396 01923	15inch reelholder 32mm spare					1			SI-FDR-453	
2-23	-	9498 396 01924	15inch reelholder 44mm spare						1		SI-FDR-453	
2-23	-	9498 396 01925	15inch reelholder 56mm spare							1	SI-FDR-453	
2-24	2-23	9498 396 01926	Reel holder axis 32mm					1				
2-24	2-23	9498 396 01927	Reel holder axis 44mm						1			
2-24	2-23	9498 396 01928	Reel holder axis 56mm							1		

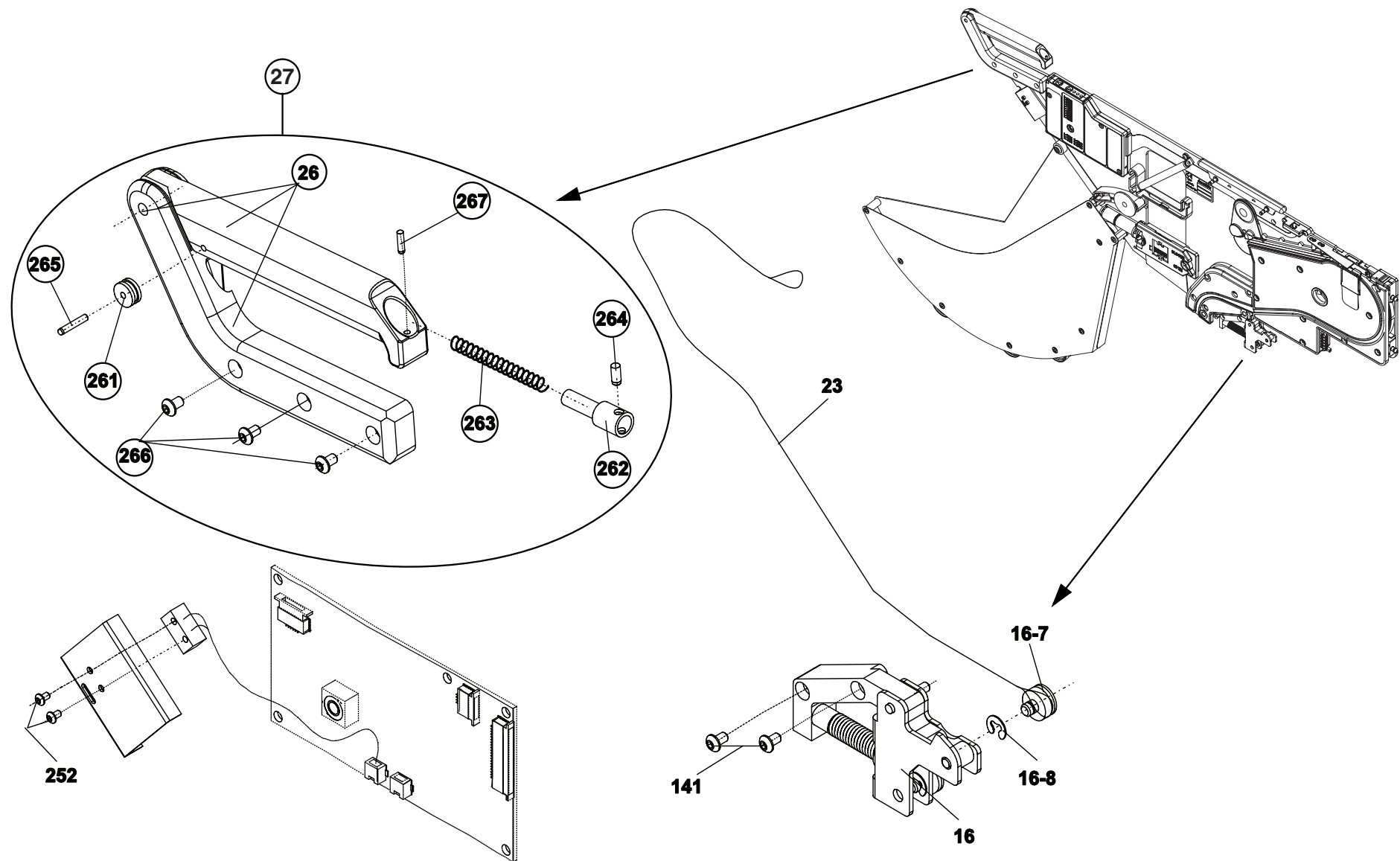
2.3.4 Topfoil Peel-off Assembly



Current spare parts list, see <http://espares.assembleon.com>

Item No.	Part of item No.	Ordering code	Description	Quantity per module							Feeder width (mm)	PA number of feeder width
				8	12	16	24	32	44	56		
				PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Top foil Peel Off Assembly												Remarks
3-151	-	9498 396 00370	Peel off unit including motor 8-16mm	1	1	1						Peel off unit with 4 wheels
3-15	-	9498 396 01532	Peel off unit excluding motor 8-16mm	1	1	1						Peel off unit with 4 wheels
15-1	3-15 and 3-151	5322 693 11522	Pivot press unit (pinion)	1	1	1	1	1	1	1		For peel off unit with 4 wheels 24-56 mm: only for PA2654/x6 and older only together with part 5322-535-10574
15-3	3-15 and 3-151	5322 466 12223	Peel-off front plate	1	1	1	1	1	1	1		For main shaft with 4 wheels 24-56 mm: only for PA2654/x6 and older
15-4	3-15, 3-151, 20 and 21	4022 516 05922	Lock/unlock knob	1	1	1	1	1	1	1		
15-5	3-15	5322 535 10574	Main shaft (pinion)	1	1	1	1	1	1	1		For peel off unit with 4 wheels 24-56 mm: only for PA2654/x6 and older, only together with part 5322-693-11522
15-6	3-151 and 20	5322 361 11113	Top foil peel off motor	1	1	1	1	1	1	1		
15-7	3-151 and 20	5322 502 14493	Csk Stl St M2x4	1	1	1	1	1	1	1		For PA2654/x6 and older quantity per module is 2, standard packing unit: 10
15-8	3-15, 3-151, 20 and 21	5322 535 14139	Dowel 1.5x8	1	1	1	1	1	1	1		
15-10	3-15, 3-151, 20 and 21	5322 492 11752	Compression spring	1	1	1	1	1	1	1		
15-151	20 and 21	5322 417 11408	Rotation lock	1	1	1	1	1	1	1		
15-152	20 and 21	9498 396 01995	Ch scr skt st zn M2x5	1	1	1	1	1	1	1		
15-153	-	5322 502 21211	Pan scr Stl St M3x5	4	4	4	4	4	4	4		For PA2654/x6 and older quantity per module is 2, standard packing unit: 25
358	-	5322 502 21211	Pan schr St Zn M3x5	2	2	2	2	2	2	2		Standard packing unit: 25
388	-	4022 516 07230	PSA plate	1	1	1	1	1	1	1		Only for PA2654/x0: special modified PSA plate.
389	-	4022 516 07570	PSA plate	1	1	1	1	1	1	1		Only for PA2654/x5 and x6
390	-	9498 396 00369	PSA plate ITF2 R3	1	1	1	1	1	1	1		8-16 mm: only for PA2654/x7 and newer 24-56 mm: only for PA2654/x7
20	-	9498 396 01915	Peel off unit including motor 24-56mm				1	1	1	1		Peel off unit with 6 wheels: compatible with PA2654/xx
21	-	9498 396 01917	Peel off unit excluding motor 24-56mm				1	1	1	1		Peel off unit with 6 wheels: compatible with PA2654/xx
22	20 and 21	9498 396 01912	Pivot press unit 24-56mm				1	1	1	1		For peel off unit with 6 wheels: for PA2654/x8 and newer, and upgraded feeders, see SI-FDR-454
23	20 and 21	9498 396 01913	Peel off fr pl 24-56mm				1	1	1	1		For peel off unit with 6 wheels: for PA2654/x8 and newer, and upgraded feeders, see SI-FDR-454
24	20 and 21	9498 396 01914	Main shaft 24-56mm				1	1	1	1		For peel off unit with 6 wheels: for PA2654/x8 and newer, and upgraded feeders, see SI-FDR-454
25	20 and 21	9498 396 01916	PSA plate for 24-56mm				1	1	1	1		For peel off unit with 6 wheels: for PA2654/x8 and newer, and upgraded feeders, see SI-FDR-454

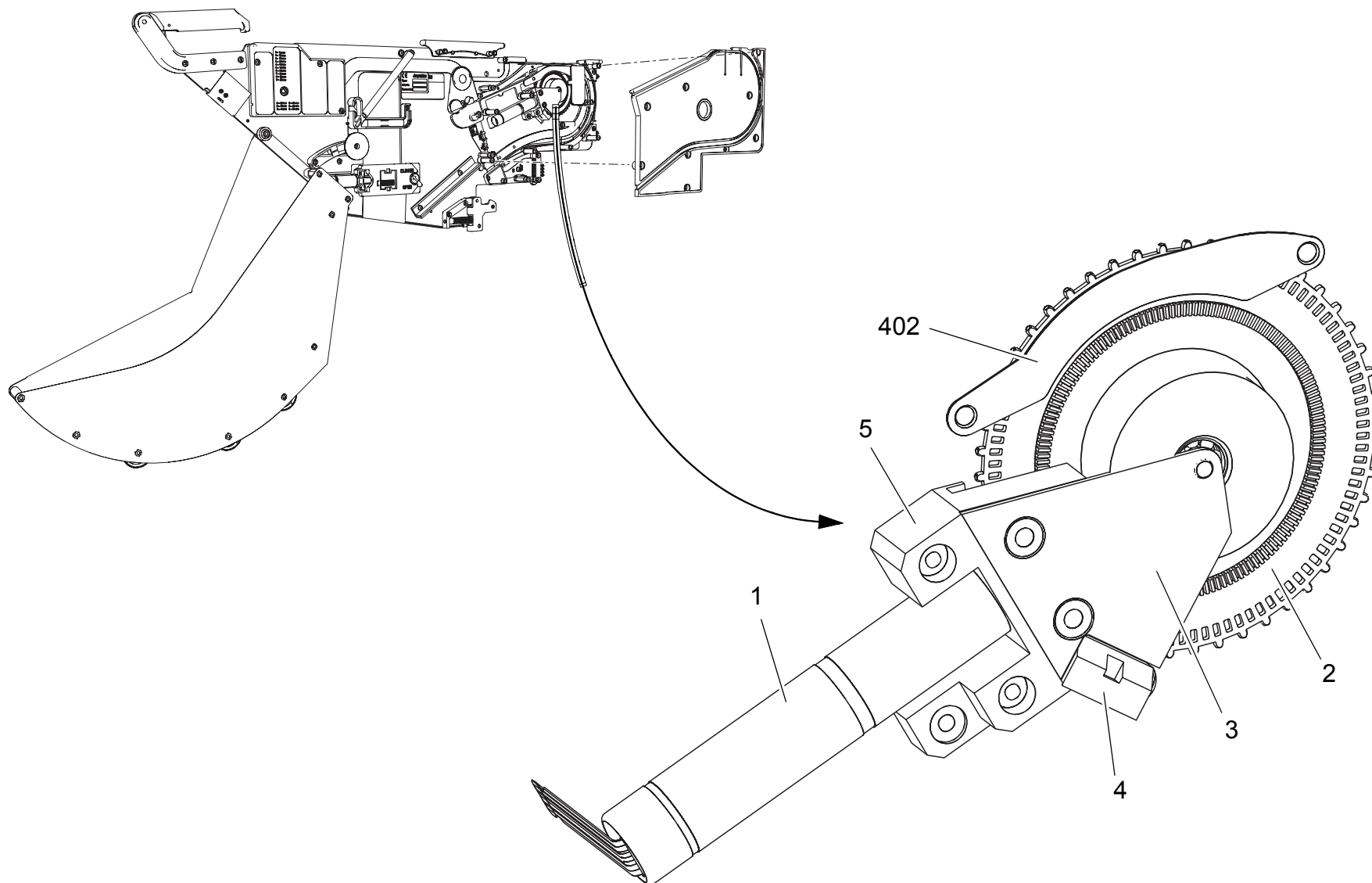
2.3.5 Clamping Lever



Current spare parts list, see <http://espareas.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							
Item No.	Part of item No.	Ordering code	Description	8	12	16	24	32	44	56	Feeder width (mm)
				PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y	PA number of feeder width
Clamping Lever											Remarks
16	-	9498 396 01389	Clamping unit assy 8-24	1			1				Including items 16-7 and 16-8
16	-	5322 401 11771	Clamping unit assy. (12mm)		1						Including items 16-7 and 16-8
16	-	5322 401 11772	Clamping unit assy. (16mm)			1					Including items 16-7 and 16-8
16	-	5322 401 11773	Clamping unit assy. (32mm)					1			Including items 16-7 and 16-8
16	-	5322 401 11774	Clamping unit assy. (44mm)						1		Including items 16-7 and 16-8
16	-	5322 401 11775	Clamping unit assy.(56 mm							1	Including items 16-7 and 16-8
16-7	16	5322 256 10546	Cable holder (8&24mm)	1			1				
16-7	16	5322 256 10569	Cable holder (12mm)		1						
16-7	16	5322 256 10568	Cable holder (16mm)			1					
16-7	16	5322 256 10567	Cable holder (32mm)					1			
16-7	16	5322 256 10566	Cable holder (44mm)						1		
16-7	16	5322 256 10571	Cable holder (56mm)							1	
16-8	16	4822 530 70123	Retain ring for cable holder	1	1	1	1	1	1	1	Standard packing unit: 10
141	-	5322 502 14405	Pan schr St Zn M3x8	2			2		2		Standard packing unit: 25 8 and 24 mm: for all releases 44 mm: only for PA2654/x7 and older, for PA2654/x8 and newer, see paragraph tape run-out guides
141	-	5322 502 21212	Pan schr St Zn M3x10		2						Standard packing unit: 25
141	-	5322 502 21213	Pan schr St Zn M3x12			2		2			Standard packing unit: 25 16 mm: for all releases 32 mm: only for PA2654/x7 and older (for PA2654/x8 and newer, see paragraph tape run-out guides)
141	-	5322 502 14155	Pan schr St Zn M3x16							2	Standard packing unit: 10 Only for PA2654/x7 and older (for PA2654/x8 and newer, see paragraph tape run-out guides)
23	-	5322 320 12489	Cable assembly	1	1	1	1	1	1	1	
26	-	5322 402 11168	Handle assembly	1	1	1	1	1	1	1	Excluding items 261/262/263/264/265/266/267
252	-	5322 502 21322	Screw pan stl M2x8	2	2	2	2	2	2	2	Only for PA2654/x6 and older
261	-	5322 528 11281	Roller	1	1	1	1	1	1	1	
262	-	5322 256 10545	Spring bolt	1	1	1	1	1	1	1	
263	-	5322 492 11729	Spring handle 0.4x36.6	1	1	1	1	1	1	1	Standard packing unit: 10
264	-	5322 529 10416	Dowel Ø3h6x8	1	1	1	1	1	1	1	Standard packing unit:
265	-	5322 529 10415	Dowel Ø2h6x12	1	1	1	1	1	1	1	Standard packing unit:
266	-	5322 502 21212	Pan schr St Zn M3x10	1	1	1	1	1	1	1	For PA2654/x6 and older quantity per module is 3, standard packing unit: 25
267	-	5322 529 10417	Dowel Ø2h6x8	1	1	1	1	1	1	1	Standard packing unit:
27	-	9498 396 00877	Handle assembly	1	1	1	1	1	1	1	

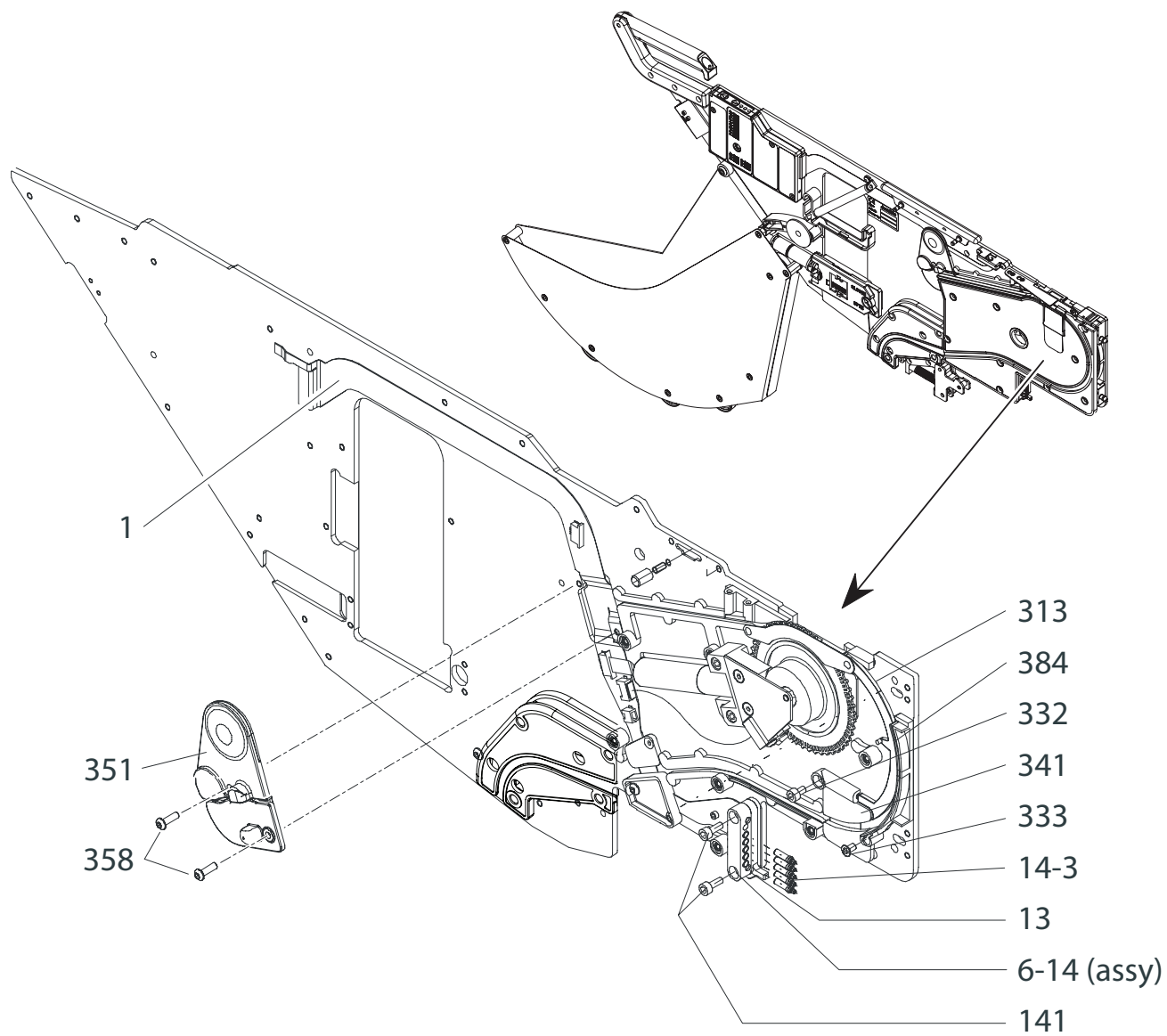
2.3.6 Sprocket Mechanism



Current spare parts list, see <http://espare.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width	
				8	12	16	24	32	44	56		
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Sprocket Mechanism											Remarks	
1	-	4022 594 10050	Feeder motor KS (index) 8 mm	1								
1	-	4022 594 10060	Feeder motor MG 12-56 mm		1	1	1	1	1	1		
2	-	4022 516 12300	Sprocket wheel spare kit	1	1	1	1	1	1	1	Standard packing unit: 5	
3	-	9498 396 00987	Retaining plate	1	1	1	1	1	1	1		
4	-	4022 594 10030	Sprocket wheel sensor	1	1	1	1	1	1	1		
5	-	9498 396 00988	Motor support block	1	1	1	1	1	1	1		
402	-	9498 396 01005	Support sheet					1	1	1	Only for PA2654/x5 and newer	

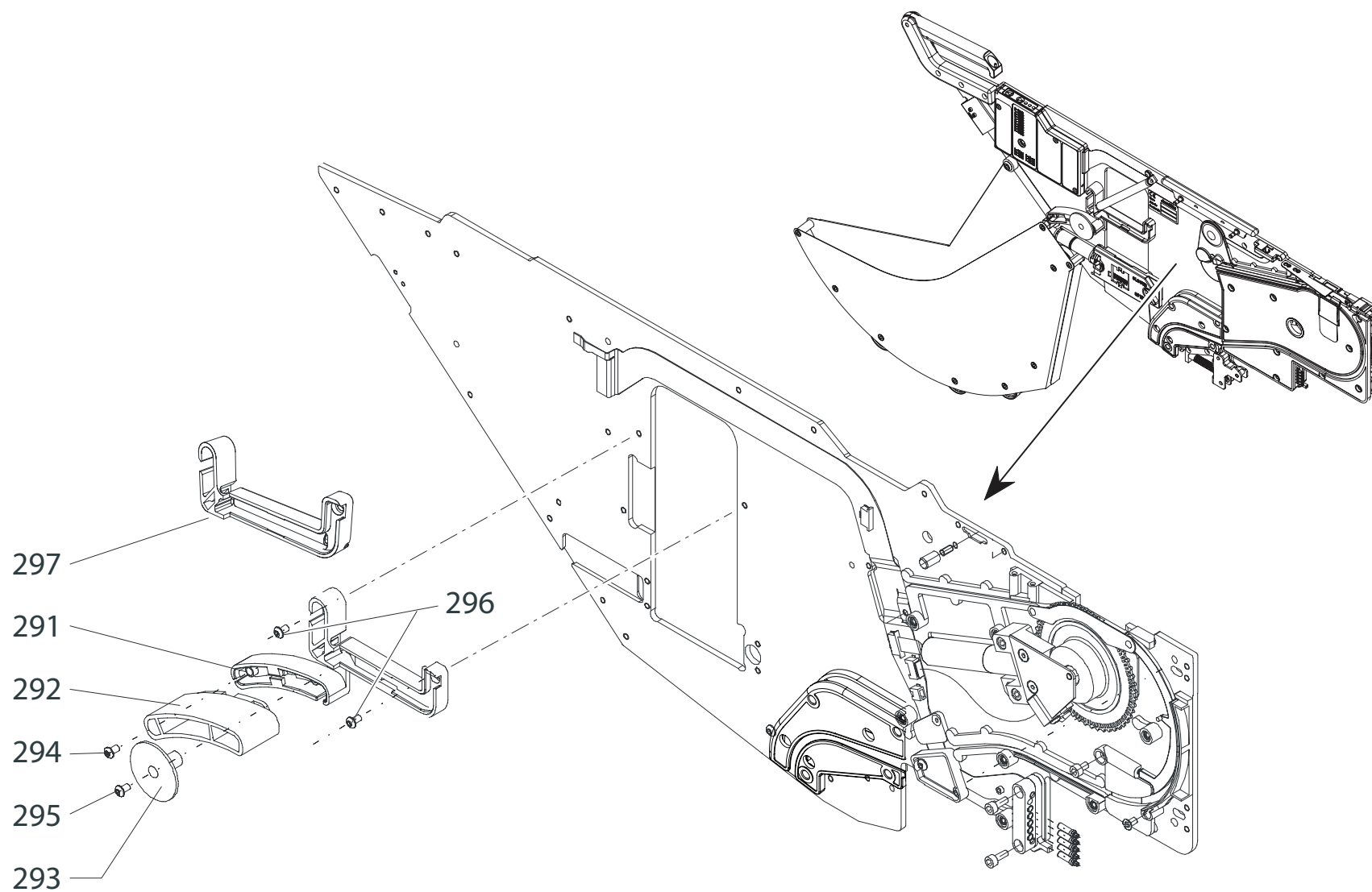
2.3.7 Base Plate



Current spare parts list, see <http://espareas.assembleon.com>

Current spare parts list, see http://espare.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width	
				8	12	16	24	32	44	56		
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Base Plate											Remarks	
1	-	9498 396 01319	Flex Foil 8mm	1								
1	-	9498 396 01320	Flex Foil12-56mm		1	1	1	1	1	1		
6-14	-	9498 396 01321	Contact Block assy	1	1	1	1	1	1	1		
13	-	5322 463 11213	Pre-guiding 8&24mm	1			1					
13	-	5322 463 11215	Pre-guiding 12mm		1							
13	-	5322 463 11216	Pre-guiding 16mm			1						
13	-	5322 463 11217	Pre-guiding 32mm					1				
13	-	5322 463 11218	Pre-guiding 44mm						1			
13	-	5322 463 11219	Pre-guiding 56mm							1		
14-3	6-14	9965 000 14444	Contact pins (5 pc)	5	5	5	5	5	5	5	Standard packing unit: 5	
141	-	5322 502 21212	Pan schr St Zn M3x10	2			2				Standard packing unit: 25	
141	-	5322 502 21213	Pan schr St Zn M3x12		2			2	2		Standard packing unit: 25	
141	-	5322 502 14616	Pan schr St Zn M3x14			2					Standard packing unit: 5	
141	-	5322 502 14155	Pan schr St Zn M3x16							2	Standard packing unit: 10	
313	-	2522 267 17002	Csk scr Stl St M2x4		1	1	1	1	1	1	Only for PA2654/x6 and newer	
341	-	4022 516 04290	Cover unit	1	1	1	1	1	1	1	Only for PA2654/x6 and newer	
351	-	9498 396 01004	Splice detection	1	1	1	1	1	1	1		
384	-	4022 538 21420	Cord NBR 75 1.4		1	1	1	1	1	1	Standard packing length is 5m, cut to correct length! (± 60mm)	

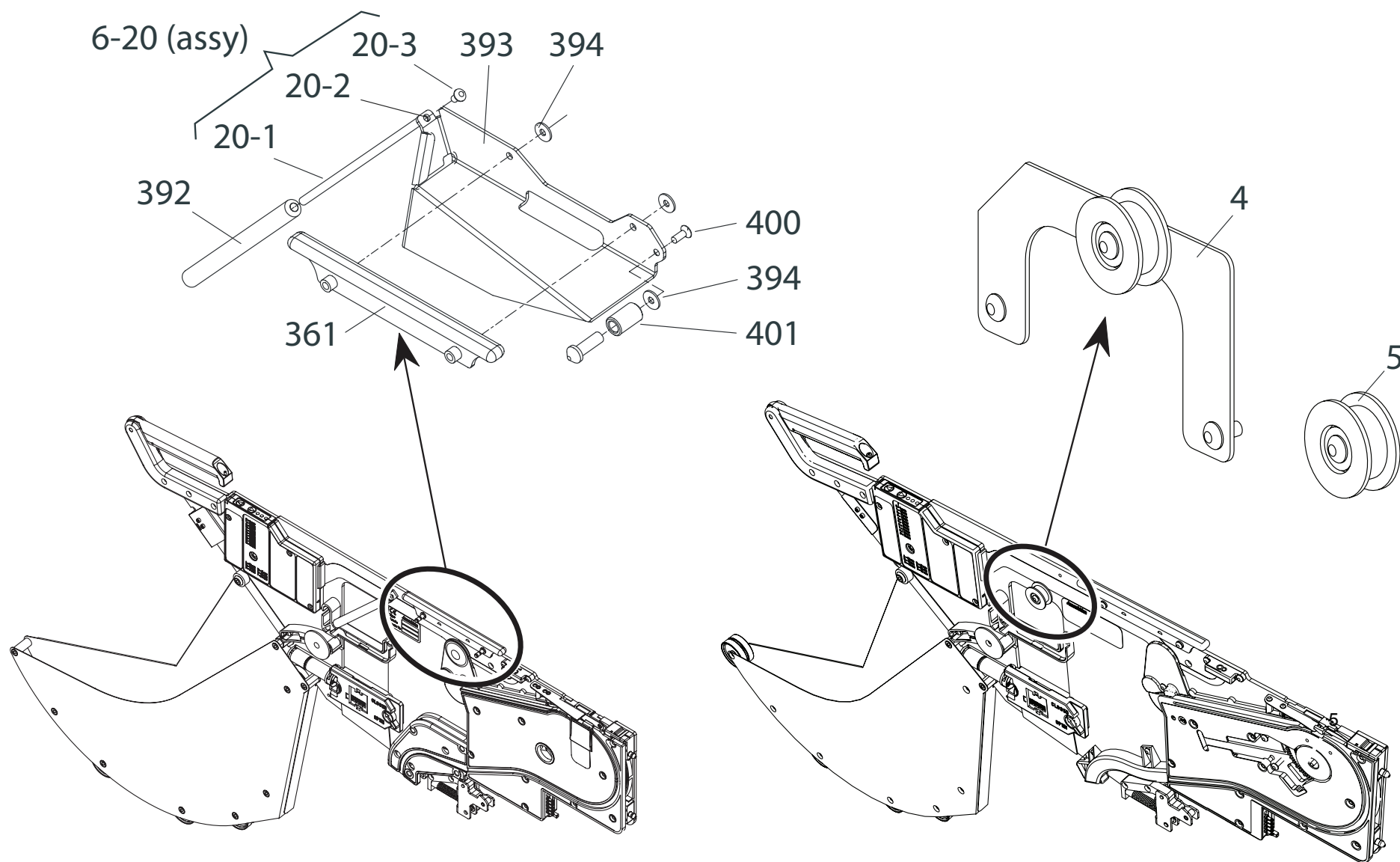
2.3.8 Tape Run-in Guide



Current spare parts list, see <http://espareas.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width
				8 PA2654/0y	12 PA2654/1y	16 PA2654/2y	24 PA2654/3y	32 PA2654/4y	44 PA2654/5y	56 PA2654/6y	
Item No.	Part of item No.	Ordering code	Description								
Tape Run-in Guide											Remarks
291	-	4022 516 04630	Top foil routing block	1	1	1	1				For 16 mm: only for PA2654/x6 and older, other feeder widths: all versions
292	-	4022 516 04620	Top foil routing block					1	1	1	Only for PA2654/x6 and older
293	-	4022 516 04940	Retaining wafer 8mm	1							
293	-	4022 516 04950	Retaining wafer 12mm		1						
293	-	4022 516 04960	Retaining wafer 16mm			1					
293	-	4022 516 04970	Retaining wafer 24mm				1				
294	-	5322 502 14405	Pan schr St Zn M3x8	1	1	1	1				Standard packing unit: 25
294	-	5322 502 21212	Pan schr St Zn M3x10					1	1	1	Standard packing unit: 25
295	-	5322 502 21213	Pan schr St Zn M3x12	1	1						Standard packing unit: 25
295	-	5322 502 14155	Pan schr St Zn M3x16			1					Standard packing unit: 10
295	-	5322 502 14536	Pan schr St Zn M3x25							1	Standard packing unit: 10
296	-	5322 502 21211	Pan schr St Zn M3x5	2	2	2	2	2	2	2	Standard packing unit: 25
297	-	9498 396 00439	Top foil routing assy				1	1	1	1	Only for PA2654/x7 and newer

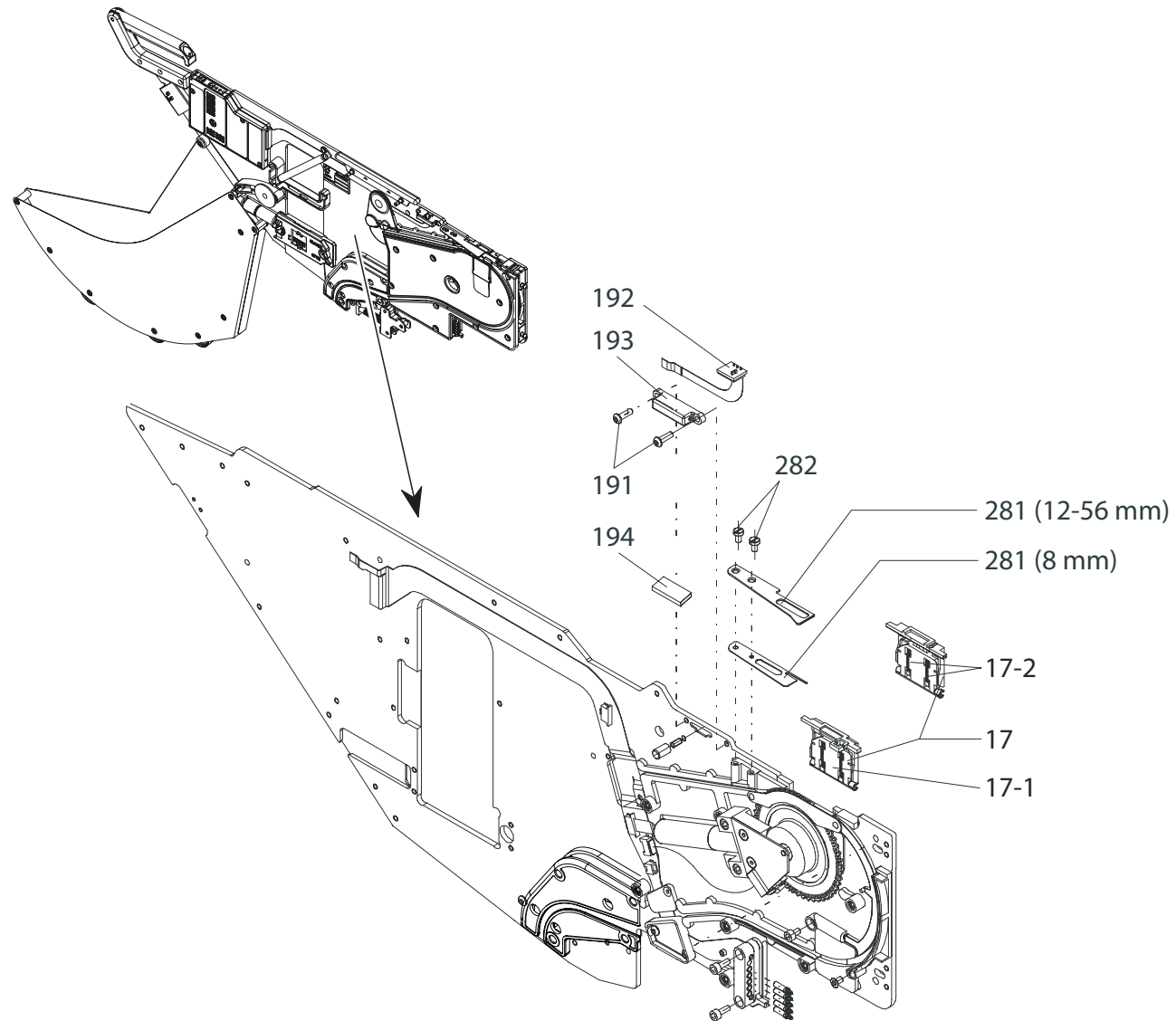
2.3.9 Top Foil and Top Guide



Current spare parts list, see <http://espareas.assembleon.com>

Item No.	Part of item No.	Ordering code	Description	Quantity per module							Feeder width (mm)	PA number of feeder width
				8	12	16	24	32	44	56		
				PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Top Foil and Top Guide											Remarks	
4	-	9498 396 01166	PEEL ROL ITF2 8MM R2	1								For PA2654/x5 and older
5	-	9498 396 01152	PEEL-OFF ROLL R3 8mm	1								PA2654/x6 and newer
20-1	-	5322 535 10576	Topfoil routing axis	1	1	1	1	1	1	1		For 8 mm: not recommended
20-2	-	4022 516 05050	Topfoil axis bracket	1								
20-2	-	4022 516 07240	Topfoil axis bracket		1	1	1	1	1	1		
20-3	-	5322 502 21211	Pan schr St Zn M3x5	2	2	2	2	2	2	2		Standard packing unit: 25
361	-	5322 463 11214	Top guiding	1	1	1	1	1	1	1		Only for PA2654/x5 and older
361	-	9498 396 00297	Top guiding 8mm	1								
361	-	9498 396 00298	Top guiding 12mm		1							
361	-	9498 396 00299	Top guiding 16mm			1						
361	-	9498 396 00364	Top guiding 24mm				1					
361	-	9498 396 00365	Top guiding 32mm					1				
361	-	9498 396 00366	Top guiding 44mm						1			
361	-	9498 396 00367	Top guiding 56mm							1		
362	-	4022 516 05760	Distance bush 12		1							Only for PA2654/x5 and older
362	-	4022 516 05770	Distance bush 16			1						Only for PA2654/x5 and older
362	-	4022 516 05780	Distance bush 32					1				Only for PA2654/x5 and older
362	-	4022 516 08210	Distance bush 44						1			Only for PA2654/x5 and older
362	-	4022 516 05790	Distance bush 56							1		Only for PA2654/x0
362	-	4022 516 08020	Distance bush 56							1		Only for PA2654/x5
392	-	4022 516 07190	PTFE sleeve rnd. 8		1	1	1	1	1	1		Only for PA2654/x5 and newer
393	-	4022 516 08190	Tape guide 44-56						1	1		Only for PA2654/x5 and newer, incl. items 394, 400, 401 and 402
394	-	5322 532 12127	Wash Stl St A4 M3						3	3		Only for PA2654/x5 and newer
400	-	2522 203 04024	Csk Stl St A4 M3x8						1	1		Only for PA2654/x5 and newer, standard packing unit: 5
401	-	4022 516 08000	Roller						1	1		Only for PA2654/x5 and newer

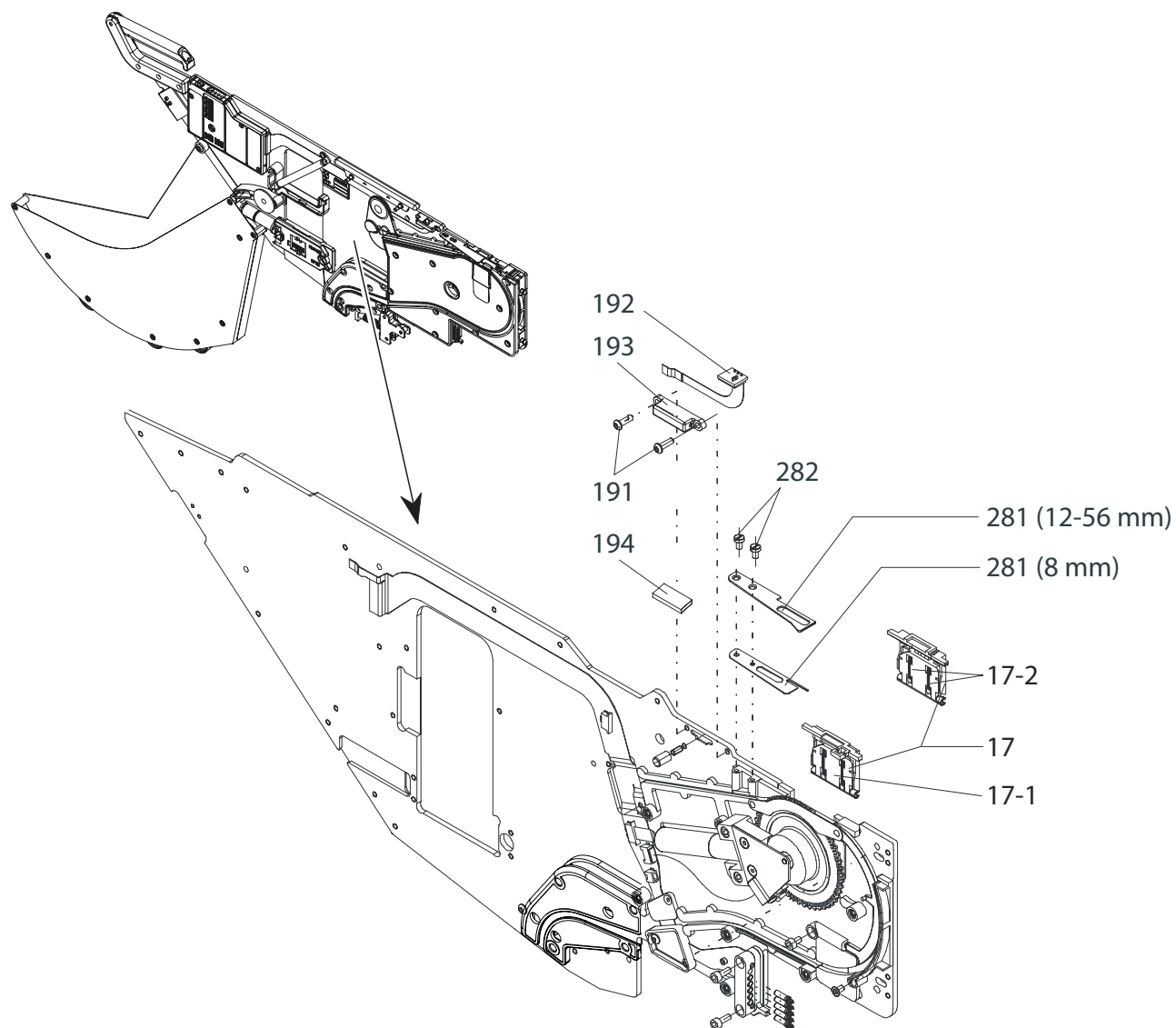
2.3.10 Pick Position



Current spare parts list, see <http://espaes.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width	
				8	12	16	24	32	44	56		
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Pick Position											Remarks	
17	-	9498 396 01387	Tape cover 8mm	1								
17	-	4022 516 07200	Tape cover (12-56mm)		1	1	1	1	1	1	For 24, 32, 44, 56 mm only for PA2654/x6 and older	
17	-	5322 442 01526	Tape cover (12-56mm)		1	1	1	1	1	1	Only for PA2654/x0	
17	-	9498 396 00993	Tape cover		1	1	1	1	1	1	Only for PA2654/x7 and newer	
17-1	17	5322 463 11263	Tape cover slide	1	1	1	1	1	1	1		
17-2	17	5322 492 11759	Compression spring (8mm)	2								
191	-	5322 502 21211	Pan schr St Zn M3x5	2							Standard packing unit: 25	
191	-	5322 502 14405	Pan schr St Zn M3x8		2						Standard packing unit: 25	
191	-	5322 502 21212	Pan schr St Zn M3x10			2					Standard packing unit: 25	
191	-	5322 502 14616	Pan schr St Zn M3x14				2				Standard packing unit: 5	
191	-	5322 502 14155	Pan schr St Zn M3x16					2			Standard packing unit: 10	
191	-	5322 502 14618	Pan schr St Zn M3x20						2	2	Standard packing unit: 5	
192	-	5322 132 00104	Receiving sensor 8mm	1								
192	-	5322 132 00106	Receiving sensor 12mm		1							
192	-	5322 132 00108	Receiving sensor 16mm			1						
192	-	5322 132 00111	Receiving sensor 24mm				1					
192	-	5322 132 00113	Receiving sensor 32mm					1				
192	-	5322 132 00115	Receiving sensor 44mm						1			
192	-	5322 132 00117	Receiving sensor 56mm							1		
193	-	5322 442 01859	Receiving cover 8mm	1								
193	-	5322 442 01861	Receiving cover 12mm		1							
193	-	5322 442 01862	Receiving cover 16mm			1						
193	-	5322 442 01863	Receiving cover 24mm				1					
193	-	5322 442 01864	Receiving cover 32mm					1				
193	-	5322 442 01865	Receiving cover 44mm						1			
193	-	5322 442 01866	Receiving cover 56mm							1		

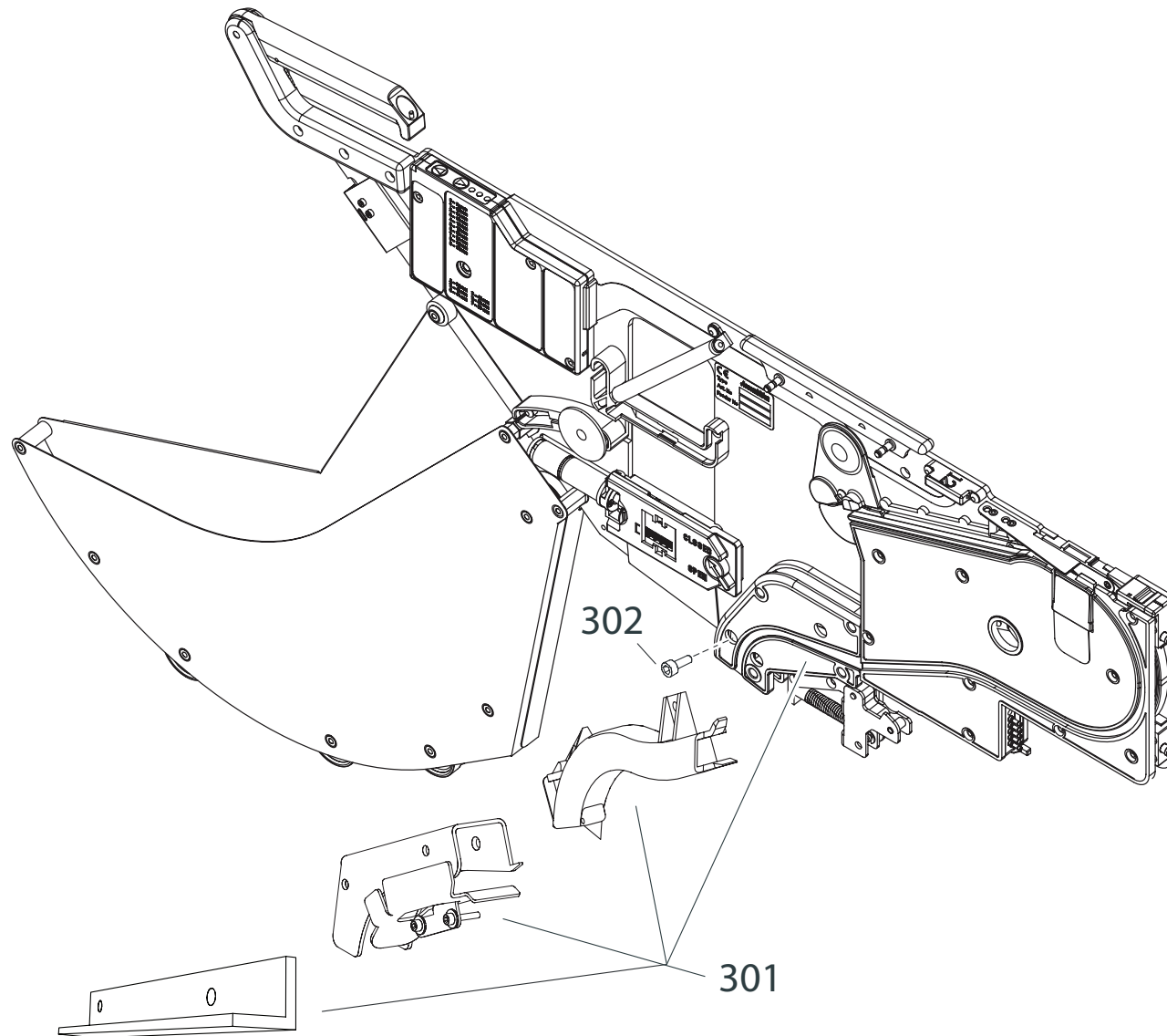
Pick Position (continued)



Current spare parts list, see <http://espaes.assembleon.com>

Item No.	Part of item No.	Ordering code	Description	Quantity per module							Feeder width (mm)	PA number of feeder width
				8	12	16	24	32	44	56		
				PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Pick Position (continued)												Remarks
194	-	5322 442 01871	Screening plate 8mm	1								
194	-	5322 442 01872	Screening plate 12mm		1							
194	-	5322 442 01873	Screening plate 16mm			1						
194	-	5322 442 01874	Screening plate 24mm				1					
194	-	5322 442 01875	Screening plate 32mm					1				
194	-	5322 442 01876	Screening plate 44mm						1			
194	-	5322 442 01877	Screening plate 56mm							1		
281	-	9498 396 00974	Peel-off plate 8mm	1								
281	-	9498 396 02047	Peel-off plate 8mm Mo	1								SI-FDR-460
281	-	4022 516 08200	Peel-off plate 12mm		1							Only for PA2654/x6: special modified peel-off plate with slit.
281	-	4022 516 07480	Peel-off plate 12mm		1							
281	-	5322 466 12047	Peel-off plate 16mm			1						
281	-	4022 516 07500	Peel-off plate 24mm				1					
281	-	4022 516 07510	Peel-off plate 32mm					1				
281	-	4022 516 07520	Peel-off plate 44mm						1			
281	-	4022 516 07530	Peel-off plate 56mm							1		
282	-	9498 396 00578	PAN SCR PT-10 2,2X6 TX	2		2			2			44 mm: only for PA2654/x6 and older
282	-	5322 502 14619	CSK St Zn 2,2x8		2		2	2		2		32 and 56 mm: only for PA2654/x6 and older
282	-	9498 396 02301	CSK SCR PT-10 2,2X8 TX		2		2	2		2		32 and 56 mm: only for PA2654/x6 and older, available from Q1, 2008 onwards
282	-	9498 396 01018	Csk Scr St Zn M2x4					2	2	2		Only for PA2654/x7 and newer

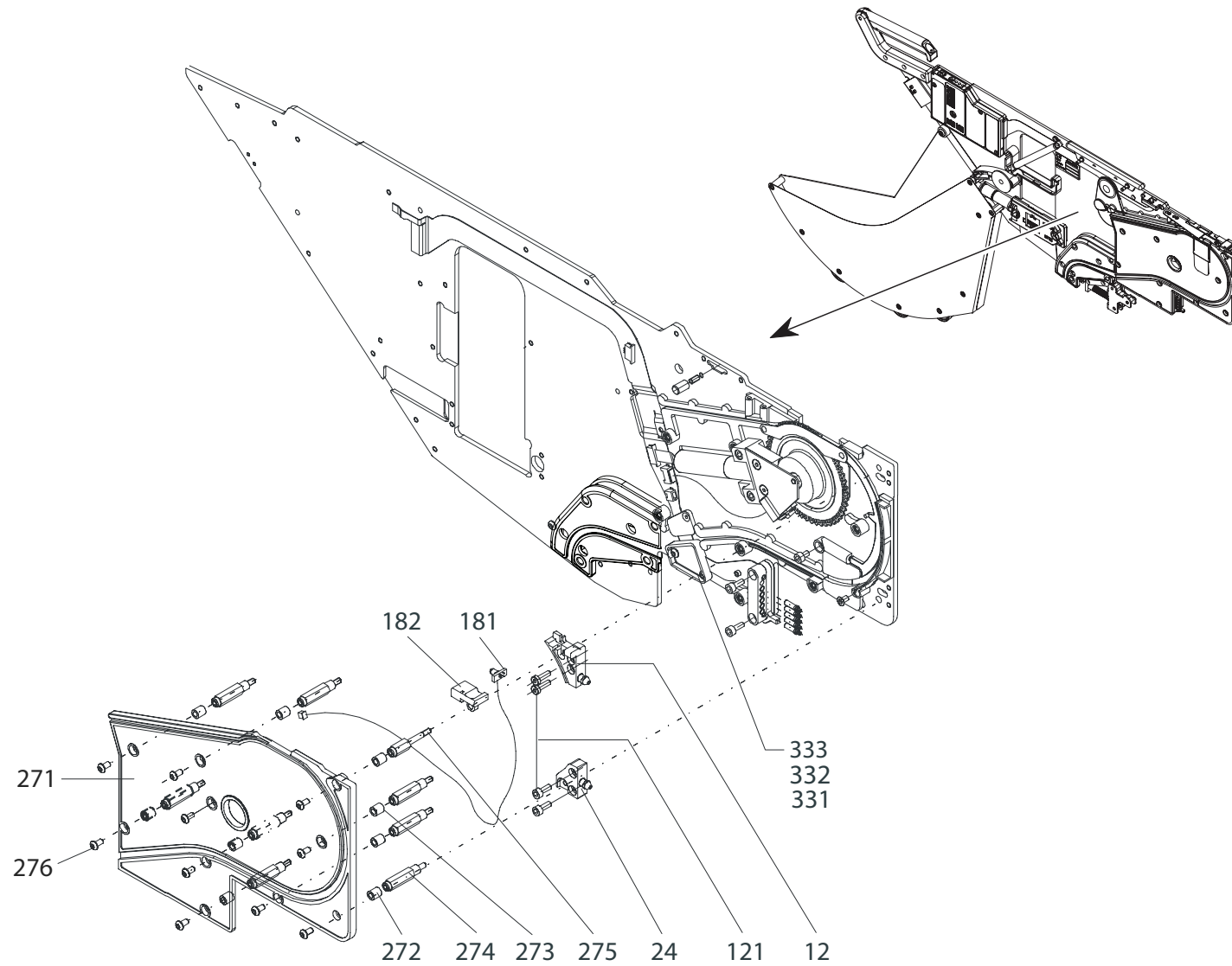
2.3.11 Tape Run-out Guides



Current spare parts list, see <http://espare.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width
				8 PA2654/0y	12 PA2654/1y	16 PA2654/2y	24 PA2654/3y	32 PA2654/4y	44 PA2654/5y	56 PA2654/6y	
Item No.	Part of item No.	Ordering code	Description								
Tape Run-out Guide											Remarks
301	-	9498 396 00557	Tape guide (metal)	1	1	1	1	1	1	1	See SI-FDR-452
301	-	9498 396 01896	Tape guide 8mm	1							See SI-FDR-452
301	-	9498 396 01897	Tape guide 12mm		1						See SI-FDR-452
301	-	9498 396 01898	Tape guide 16mm			1					See SI-FDR-452
301	-	9498 396 01899	Tape guide 24mm				1				See SI-FDR-452
301	-	9498 396 01900	Tape guide 32mm					1			See SI-FDR-452
301	-	9498 396 01901	Tape guide 44mm						1		See SI-FDR-452
301	-	9498 396 01902	Tape guide 56mm							1	See SI-FDR-452
301	-	9498 396 00292	Tape guide 16 mm								For ITF2 16 mm deep pocket tape feeder 15.4 mm in combination with tape cutter
301	-	9498 396 00293	Tape guide 24 mm								For ITF2 24 mm deep pocket tape feeder 15.4 mm in combination with tape cutter
302	-	5322 502 21211	Pan schr St Zn M3x5	2	2	2	2	2	2	2	Standard packing unit: 25

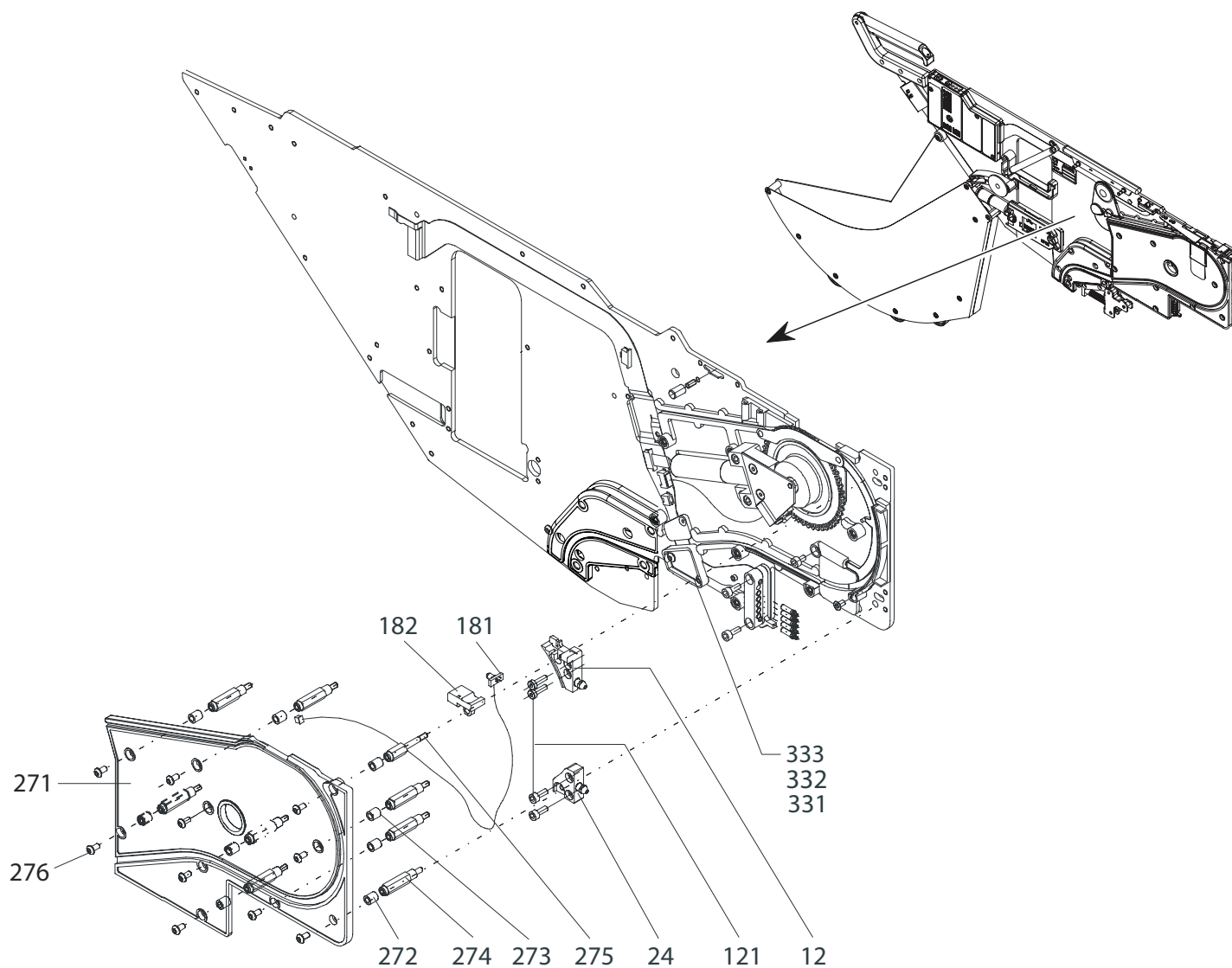
2.3.12 Side Plate



Current spare parts list, see <http://espares.assembleon.com>

Item No.	Part of item No.	Ordering code	Description	Quantity per module							Feeder width (mm)	PA number of feeder width
				8	12	16	24	32	44	56		
				PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Side Plate												Remarks
12	-	5322 693 11518	Position unit, top 8mm	1								
12	-	5322 693 11523	Position unit, top 12mm		1							
12	-	5322 693 11525	Position unit, top 16mm			1						
12	-	5322 693 11527	Position unit, top 24mm				1					
12	-	9498 396 00989	Position unit, top 24mm				1					Only for project feeder 9466 920 10731
12	-	5322 693 11528	Position unit, top 32mm					1				Only for PA2654/x6 and older
12	-	9498 396 00990	Position unit, top 32mm					1				Only for PA2654/x7 and newer
12	-	5322 693 11531	Position unit, top 44mm						1			Only for PA2654/x6 and older
12	-	9498 396 00991	Position unit, top 44mm						1			Only for PA2654/x7 and newer
12	-	5322 693 11533	Position unit, top 56mm							1		Only for PA2654/x6 and older
12	-	9498 396 00992	Position unit, top 56mm							1		Only for PA2654/x7 and newer
24	-	5322 693 11519	Position unit, bottom 8&24	1			1					
24	-	5322 693 11524	Position unit, bottom 12mm		1							
24	-	5322 693 11526	Position unit, bottom 16mm			1						
24	-	5322 693 11529	Position unit, bottom 32mm					1				
24	-	5322 693 11532	Position unit, bottom 44mm						1			
24	-	5322 693 11534	Position unit, bottom 56mm							1		
121	-	5322 502 14405	Pan schr St Zn M3x8	4								Standard packing unit: 25
121	-	5322 502 21212	Pan schr St Zn M3x10		4				4			Standard packing unit: 10
121	-	5322 502 21213	Pan schr St Zn M3x12			4	4	4				Standard packing unit: 25
121	-	5322 502 14155	Pan schr St Zn M3x16							4		Standard packing unit: 10
181	-	5322 132 00103	Transmitting sensor 8mm	1								
181	-	5322 132 00105	Transmitting sensor 12mm		1							
181	-	5322 132 00107	Transmitting sensor 16mm			1						
181	-	5322 132 00109	Transmitting sensor 24mm				1					
181	-	5322 132 00112	Transmitting sensor 32mm					1				
181	-	5322 132 00114	Transmitting sensor 44mm						1			
181	-	5322 132 00116	Transmitting sensor 56mm							1		
182	-	5322 442 01858	Transmitting cover 8mm	1								
182	-	5322 442 01857	Transmitting cover 12mm		1							
182	-	5322 442 01856	Transmitting cover 16mm			1						
182	-	5322 442 01855	Transmitting cover 24mm				1					
182	-	5322 442 01854	Transmitting cover 32mm					1				
182	-	5322 442 01853	Transmitting cover 44mm						1			
182	-	5322 442 01852	Transmitting cover 56mm							1		

Side Plate (continued)



Current spare parts list, see <http://espareas.assembleon.com>

Current spare parts list, see http://espares.assembleon.com				Quantity per module							Feeder width (mm) PA number of feeder width	
				8	12	16	24	32	44	56		
Item No.	Part of item No.	Ordering code	Description	PA2654/0y	PA2654/1y	PA2654/2y	PA2654/3y	PA2654/4y	PA2654/5y	PA2654/6y		
Side Plate (continued)											Remarks	
271	-	9498 396 01154	Cover + spring 8mm	1								
271	-	9498 396 00374	Cover 12-24mm		1	1	1					
271	-	9498 396 00994	Cover 24mm				1				Only for project feeder 9466 920 10731	
271	-	5322 442 01532	Cover 32mm					1			Only for PA2654/x6 and older	
271	-	5322 442 01533	Cover 44-56mm						1	1	Only for PA2654/x6 and older	
271	-	9498 396 00995	Cover 32-56mm					1	1	1	Only for PA2654/x7 and newer	
272	-	4022 516 05180	Distance bush 12		8							
272	-	4022 516 05190	Distance bush 16			8						
272	-	4022 516 05200	Distance bush 24				8					
272	-	4022 516 05210	Distance bush 32					8				
273	-	4022 516 05240	Distance bush 12-1		1							
273	-	4022 516 05250	Distance bush 16-1			1						
273	-	4022 516 05260	Distance bush 24-1				1					
274	-	9498 396 00996	Cover Spacer 24				1				Only for project feeder 9466 920 10731	
274	-	9498 396 00997	Cover Spacer 32					1			Only for PA2654/x7 and newer	
274	-	4022 516 05490	Cover Spacer 44						8		Only for PA2654/x6 and older	
274	-	9498 396 00998	Cover Spacer 44						1		Only for PA2654/x7 and newer	
274	-	4022 516 05500	Cover Spacer 56							8	Only for PA2654/x6 and older	
275	-	9498 396 00999	Cover Spacer 56							1	Only for PA2654/x7 and newer	
275	-	9498 396 01000	Cover Spacer front 24				1				Only for PA2654/x7 and newer	
275	-	9498 396 01001	Cover spacer front 32					1			Only for PA2654/x7 and newer	
275	-	9498 396 01002	Cover spacer front 44						1		Only for PA2654/x7 and newer	
275	-	9498 396 01003	Cover spacer front 56							1	Only for PA2654/x7 and newer	
276	-	5322 502 14405	Pan schr St Zn M3x8	10							Standard packing unit: 25	
276	-	5322 502 21213	Pan schr St Zn M3x12		9						Standard packing unit: 25	
276	-	5322 502 14155	Pan schr St Zn M3x16			9					Standard packing unit: 10	
276	-	5322 502 14536	Pan schr St Zn M3x25				9				Standard packing unit: 10	
276	-	5322 502 14617	Pan schr St Zn M3x35					9			Standard packing unit: 10	
276	-	5322 502 14403	Pan schr St Zn M3x6						9	9	Standard packing unit: 25	
331	-	4022 516 04280	Cover unit	1	1	1	1	1	1	1		
332	-	5322 502 21211	Pan schr St Zn M3x5	2	2	2	2	2	2	2	Standard packing unit: 25	
333	-	5322 502 14419	Csk scr Stl St M3x5	2	2	2	2	2	2	2	Standard packing unit: 25	

CHAPTER 3 Twin tape feeder

3.1 Module Overview

The spare parts detailed in section 3.3 are divided into the following modules:

[chapter 3.3.1 "Complete Feeder"](#)

[chapter 3.3.2 "Control unit"](#)

[chapter 3.3.3 "Reel Holder Assembly"](#)

[chapter 3.3.4 "Topfoil Peel-off Assembly"](#)

[chapter 3.3.5 "Clamping Lever Assembly"](#)

[chapter 3.3.6 "Base Plate"](#)

[chapter 3.3.7 "Indexing Mechanism"](#)

[chapter 3.3.8 "Flex foils"](#)

[chapter 3.3.9 "Screws \(no drawings available\)"](#)

[chapter 3.3.10 "Tools"](#)

3.2 Repair

Only the parts mentioned in this chapter can be repaired locally. For all other repairs feeders must be returned to the repairshop for customized repair.

If a feeder is sent back for customized repair, the following conditions are defined:

- The life time of the feeder should not exceed 4 years.
- The feeder should be returned in the original packaging or should be packed in such way that damage during transportation is avoided at all times.
- If a number of functional parts are missing or wrong parts (self made parts etc.) are added and adding/replacing those parts exceed the repair price, then the feeder will be returned without repair. Costs for analysis will be charged! A notice will be included.
- Twin Tape Feeders are defined as customized repair article only. This implies that the repaired feeder is returned to the originator.
- RMA number must be added (available via the region).
- Customized repair number must be added. See 3.3.1 for the number.
- Minimal repair quantity is three feeders in one shipment.
- Lead time of repair:

Amount of feeders	Lead time
< 10	6 weeks
> 10	In mutual agreement

3.3 Spare parts lists

The fields in the spare parts list have the following meaning:

Item No.:	Position Identification.
Part of Item No.:	Module the part belongs to.
Ordering Code:	The ordering code at Assembléon.
Description:	Description of the article.
Quantity per module:	<p>The quantity of the part in one module. Because this manual covers all TTF feeders, all separate versions are mentioned.</p> <p>Version is indicated by the PA number of the feeder (see also FIGURE 2):</p> <ul style="list-style-type: none"> •First four digits of PA number indicate the type of feeder (twin tape feeder). •Last digit of PA number indicates the version of the feeder. <p>The PA number can be located according to FIGURE 2.</p>
Remarks:	<p>1.Comment or specific information.</p> <p>2.Standard Packing Unit: Minimum packing quantity received at ordering.</p>



NOTE: There are no consumables

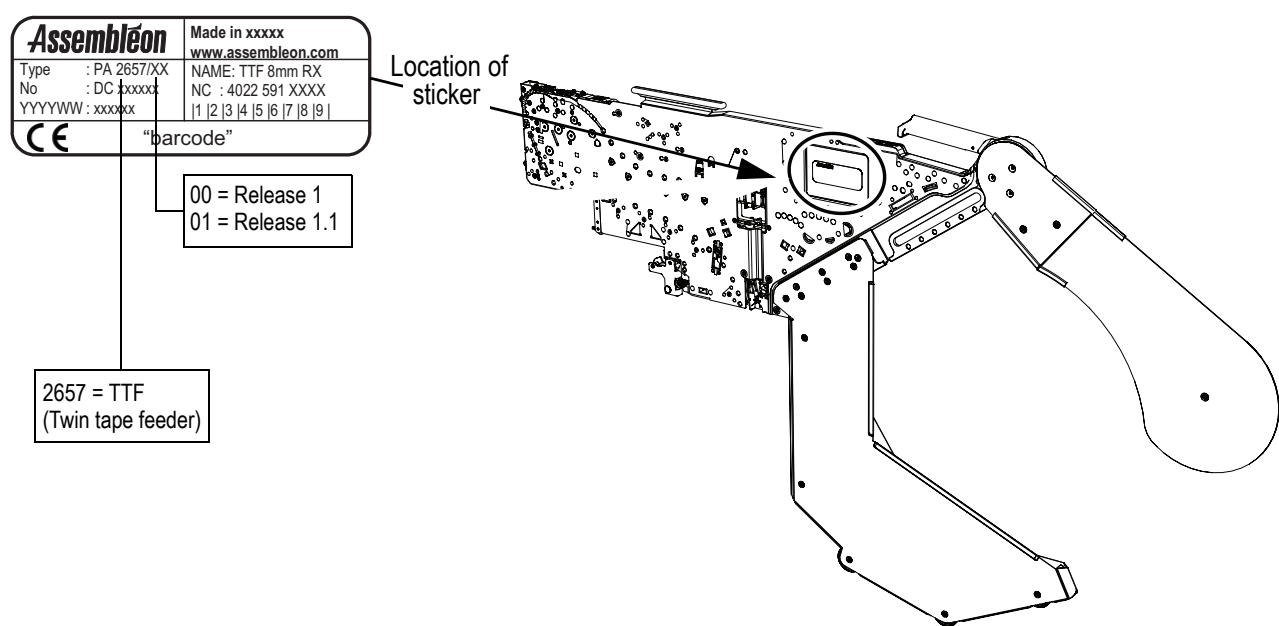
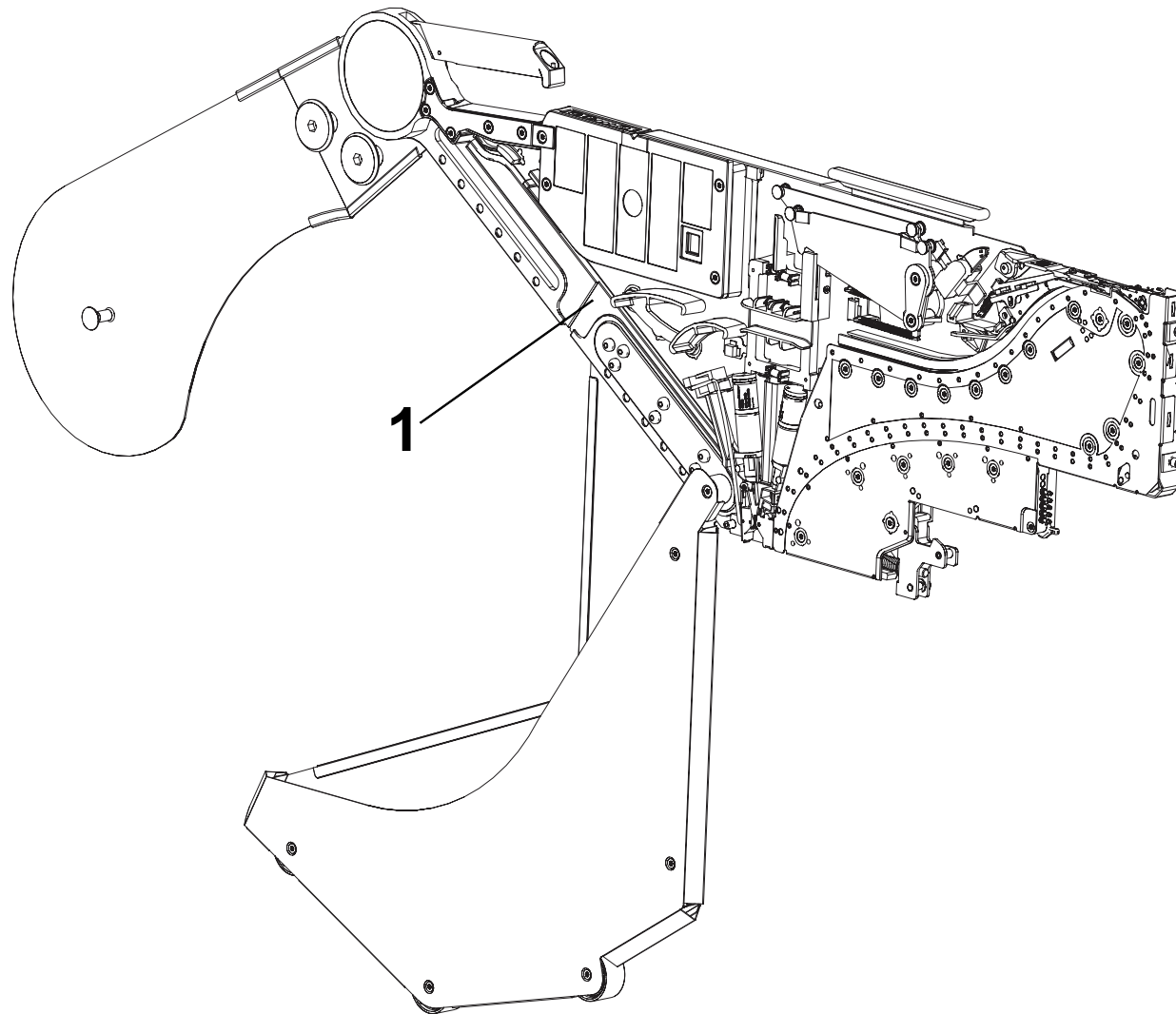


FIGURE 2

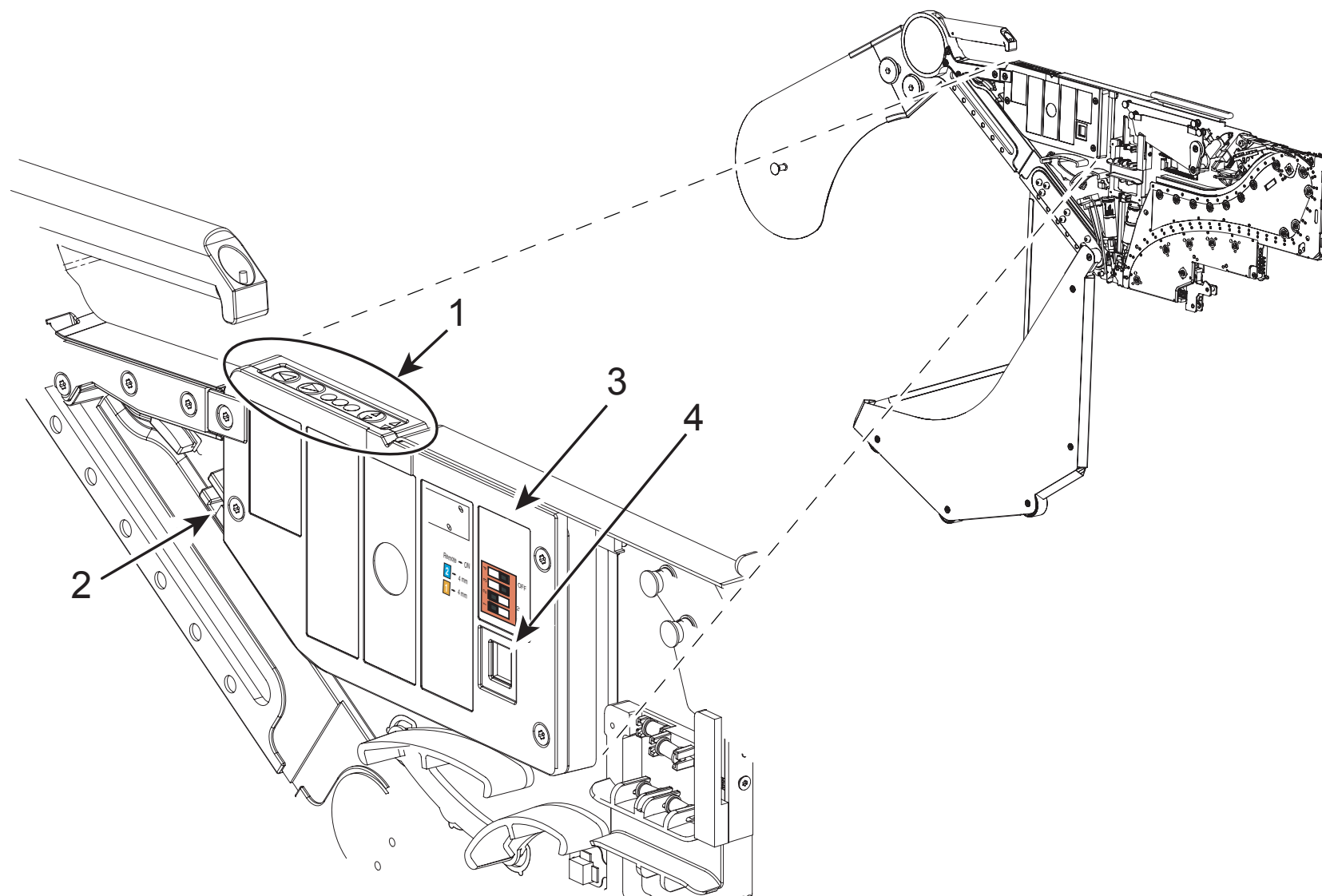
3.3.1 Complete Feeder



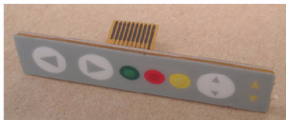
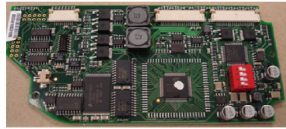
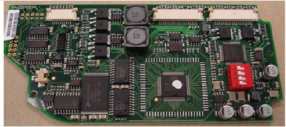

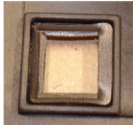
Current spare parts list, see <http://espaes.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Complete Feeder					
1	9498 396 00151	TTF 8mm R1.1	-	1	PA2657/00: new feeder
1	9498 396 01600	TTF 8mm R1.1	-	1	PA2657/01: new feeder Available from Q1, 2008 onwards
1	9498 398 01600	TTF 8mm R1.1 rep	-	1	Customized repaired feeder
1	9498 398 00151	TTF 8mm R1.0 rep	-	1	Customized repaired feeder

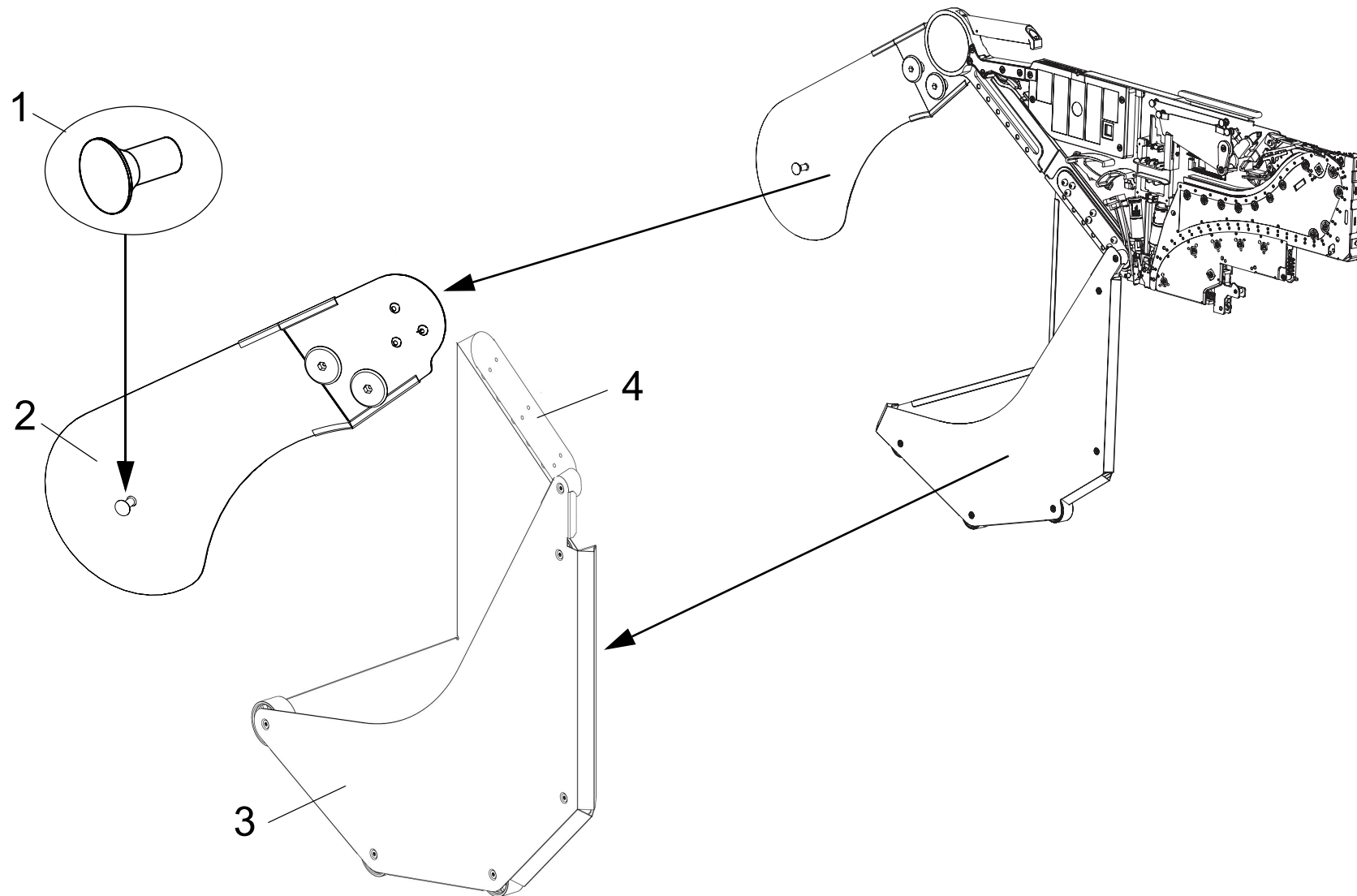
3.3.2 Control unit




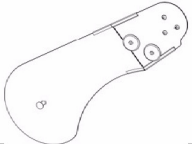


Current spare parts list, see <http://espare.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Control Unit					
1	9498 396 00202	Human Interface TTF		1	
2	9498 396 00210	Controller TTF R1.0		1	For PA2657/00 Marked with 4022-594-1215x on sticker.
2	9498 396 01654	Controller TTF R1.1		1	For PA2657/01 and newer Marked with 4022-594-1717x on sticker.
3	9498 396 00227	Controller cover		1	
4	9498 396 01381	Seal		1	

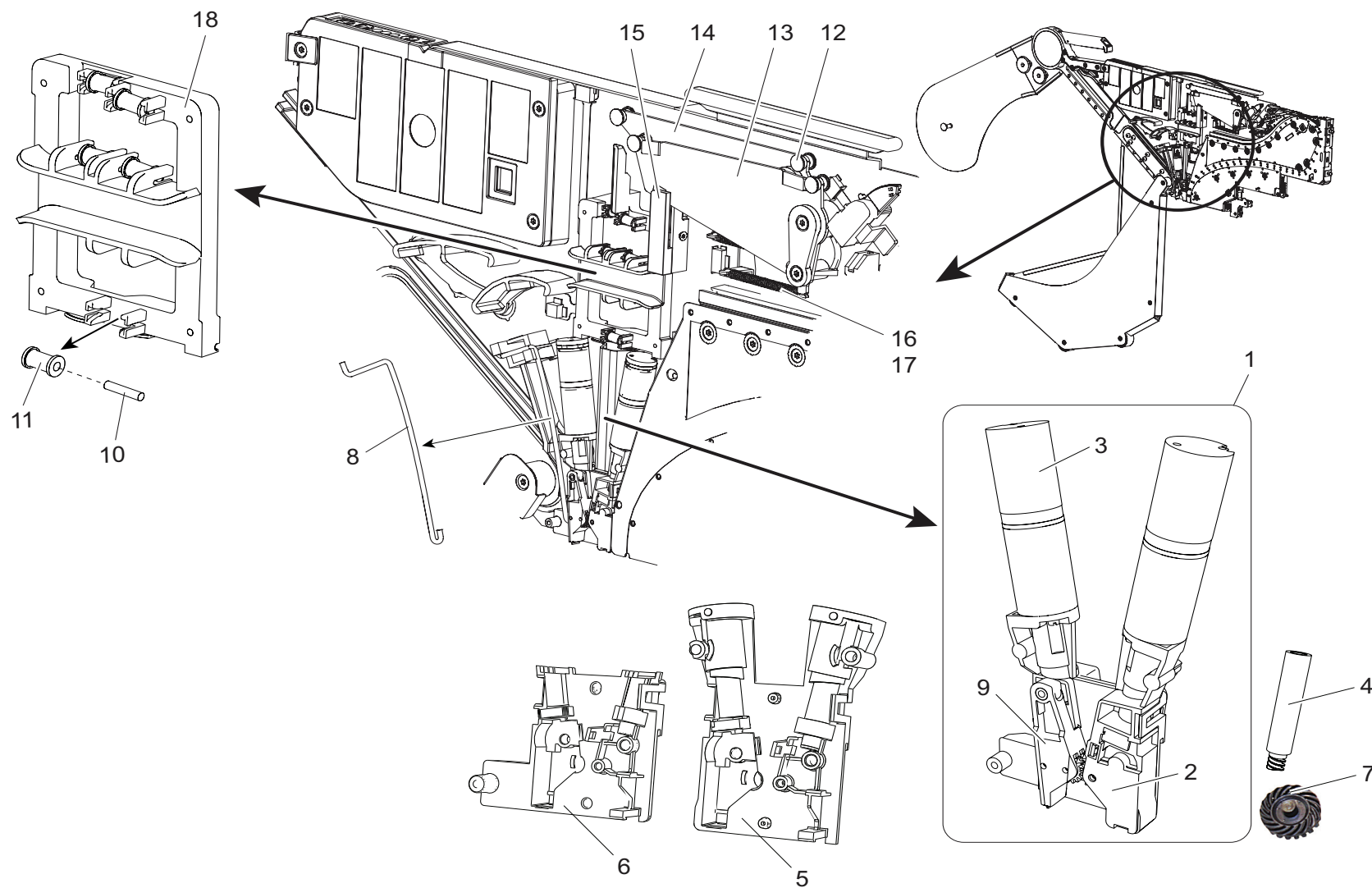
3.3.3 Reel Holder Assembly



Current spare parts list, see <http://espare.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Reel Holder Assembly					
1	9498 396 01422	Reel clamp assy TTF		1	Part of item no. 2
2	9498 396 00249	Reel holder upper lane		1	
3	9498 396 00175	Reel holder lower lane		1	
4	9498 396 00177	Block reelholder		1	

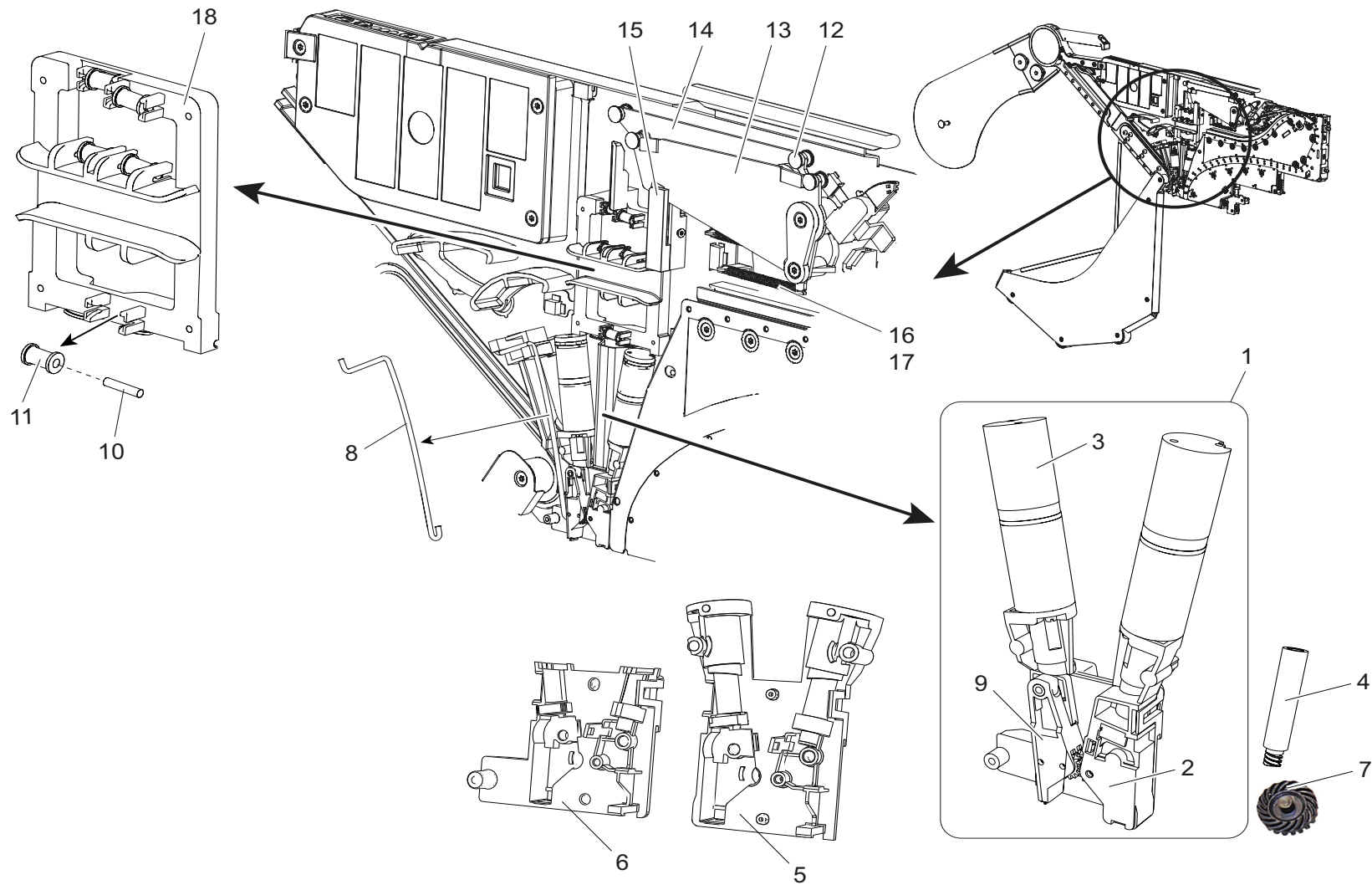
3.3.4 Topfoil Peel-off Assembly












Current spare parts list, see <http://espareas.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Topfoil Peel Off Assembly					
1	9498 396 00196	TTF peel off unit		1	
2	9498 396 00198	Peel off module		1	Part of item no. 1
3	9498 396 00197	Peel off motor		2	Part of item no. 1
4	9498-396-02060	Driving gear metal		2	Part of item no. 1 and 3 SI-FDR-459
5	9498-396-02120	Housing bottom		1	Part of item no. 1 and 2 SI-FDR-459
6	9498-396-02122	Housing top		1	Part of item no. 1 and 2 SI-FDR-459
7	9498-396-02124	Crown gear metal		2	Part of item no. 1 and 2 SI-FDR-459
8	9498 396 00195	Wire spring		2	
9	9498 396 00720	Peel off handle assy		2	Part of item no. 1 and 2

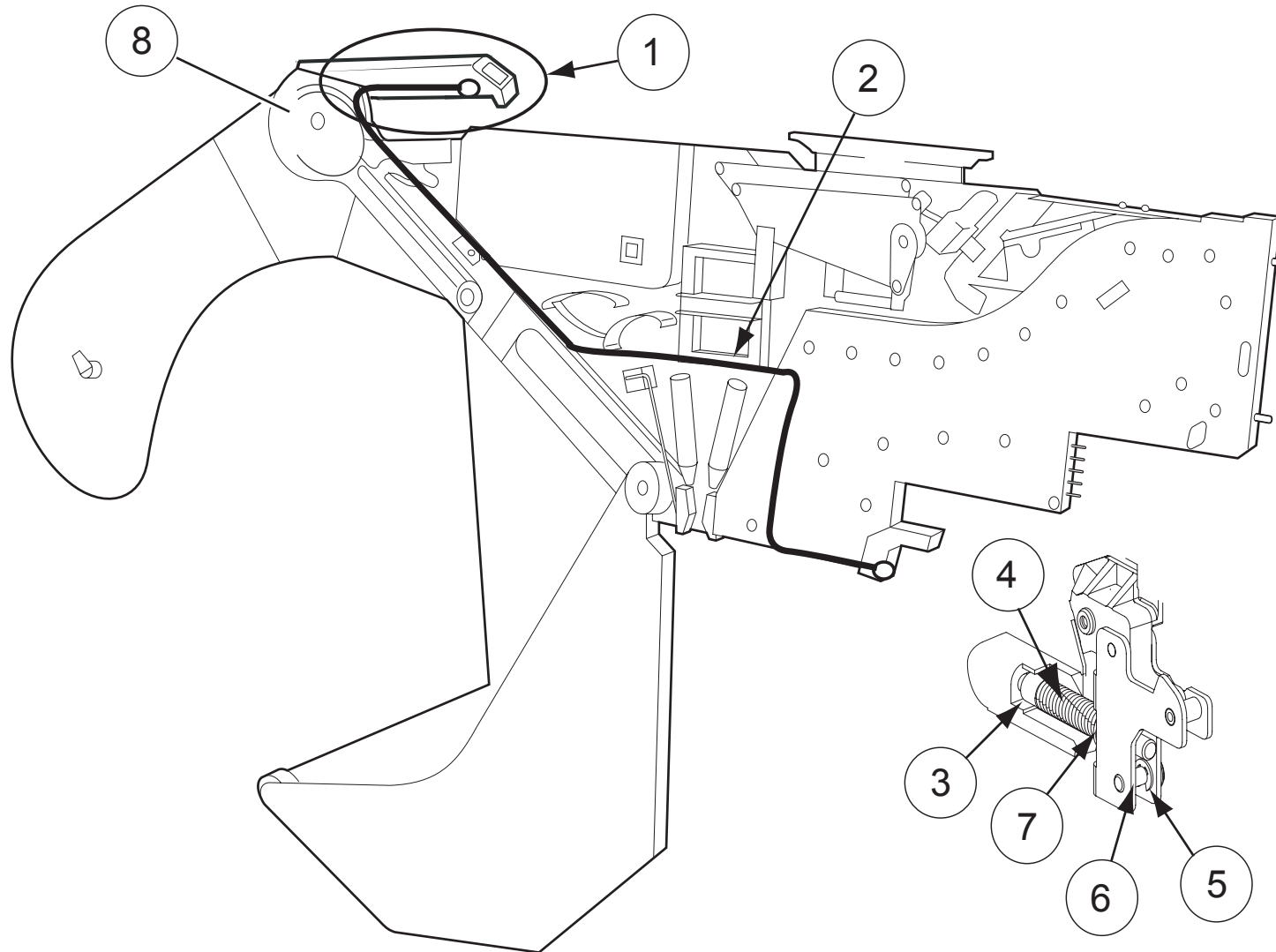
Topfoil Peel-off Assembly Continued











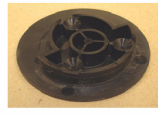
Current spare parts list, see <http://espares.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Topfoil Peel Off Assembly (continued)					
10	9498 396 00214	Dowel transport roll		6	
11	9498 396 00213	Transport roll		6	Standard packing unit: 25
12	9498 396 00191	Lever roll		4	Standard packing unit: 10 Part of item no. 9 and 10
13	9498 396 00190	Lever assy lower lane		1	
14	9498 396 00192	Lever assy upper lane		1	
15	9498 396 00203	Buffer sensors		1	
16	9498 396 01379	Buffer tension spring		2	
17	9498 396 02301	Buffer tension spring		2	SI-FDR-461 Available from Q1, 2008 onwards.
18	9498 396 00212	Top foil unit		1	

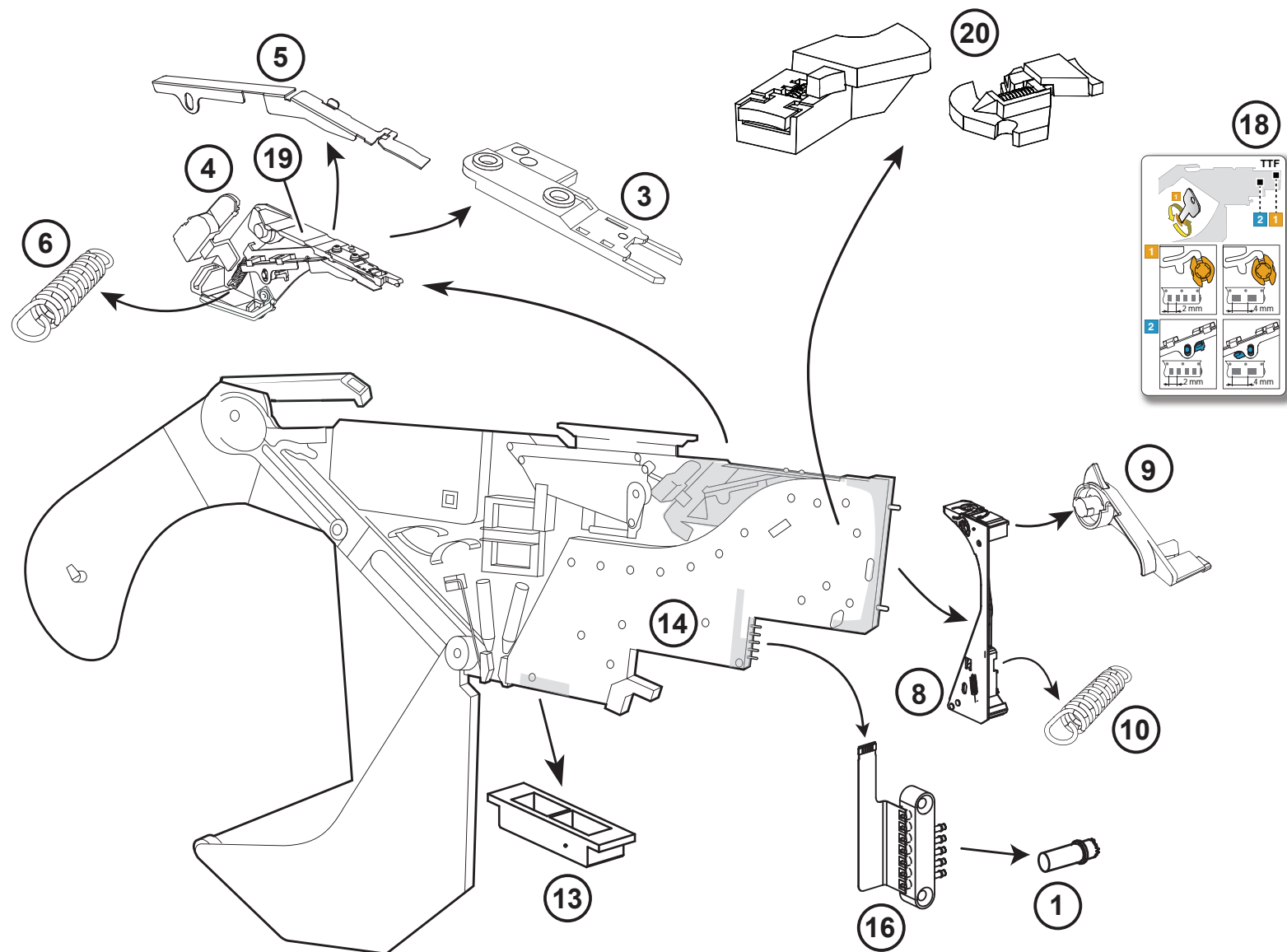
3.3.5 Clamping Lever Assembly











Current spare parts list, see <http://espare.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Clamping Lever Assembly					
1	9498 396 00193	Handle		1	Only for PA2657/00
1	9498 396 01601	Handle (black)		1	Only for PA2657/01 and newer. Available from Q1, 2008 onwards.
2	9498 396 00194	Cable assy		1	
3	5322 535 10621	Shaft		1	
4	5322 492 11731	Spring		1	
5	5322 532 13121	Circlip		1	
6	9498 396 00220	Cable holder TTF		1	
7	9498 396 00201	Washer (5 pc)		1	
8	9498 396 00183	Disk cam		1	

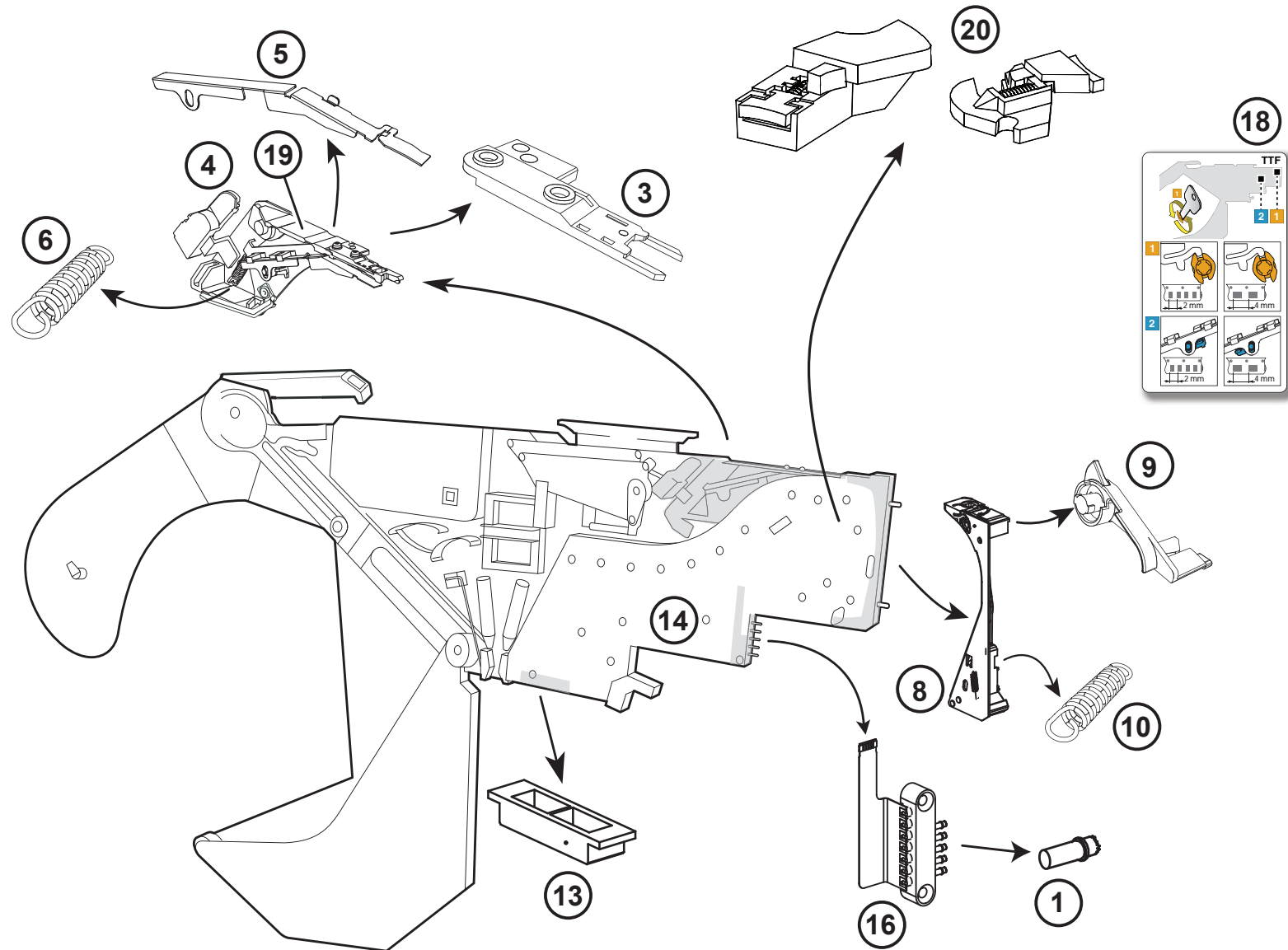
3.3.6 Base Plate




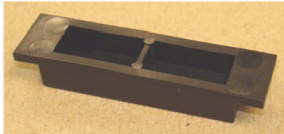

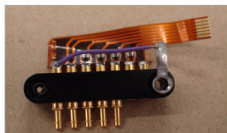
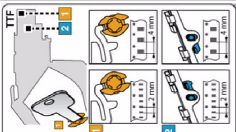


Current spare parts list, see <http://espaes.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Base Plate					
1	9965 000 14444	Contact pins (5 pc)		1	
3	9498 396 01157	Light guide lower lane		1	See SI-FDR-428
4	9498 396 01595	Nozzle catch lower lane with slit		1	
5	9498 396 01651	Peel off plate lower lane with slit		1	Part of item no. 4
5	9498 396 02299	Peel off plate lower lane with slit		1	Without notch, see SI-FDR-463 Part of item no. 4 Available from Q1, 2008 onwards
6	9498 396 00231	Tension spring lower lane		1	Part of item no. 4
8	9498 396 01602	Nozzle catch upper lane with slit		1	
9	9498 396 01156	Peel off plate upper lane with slit		1	Part of item no. 8

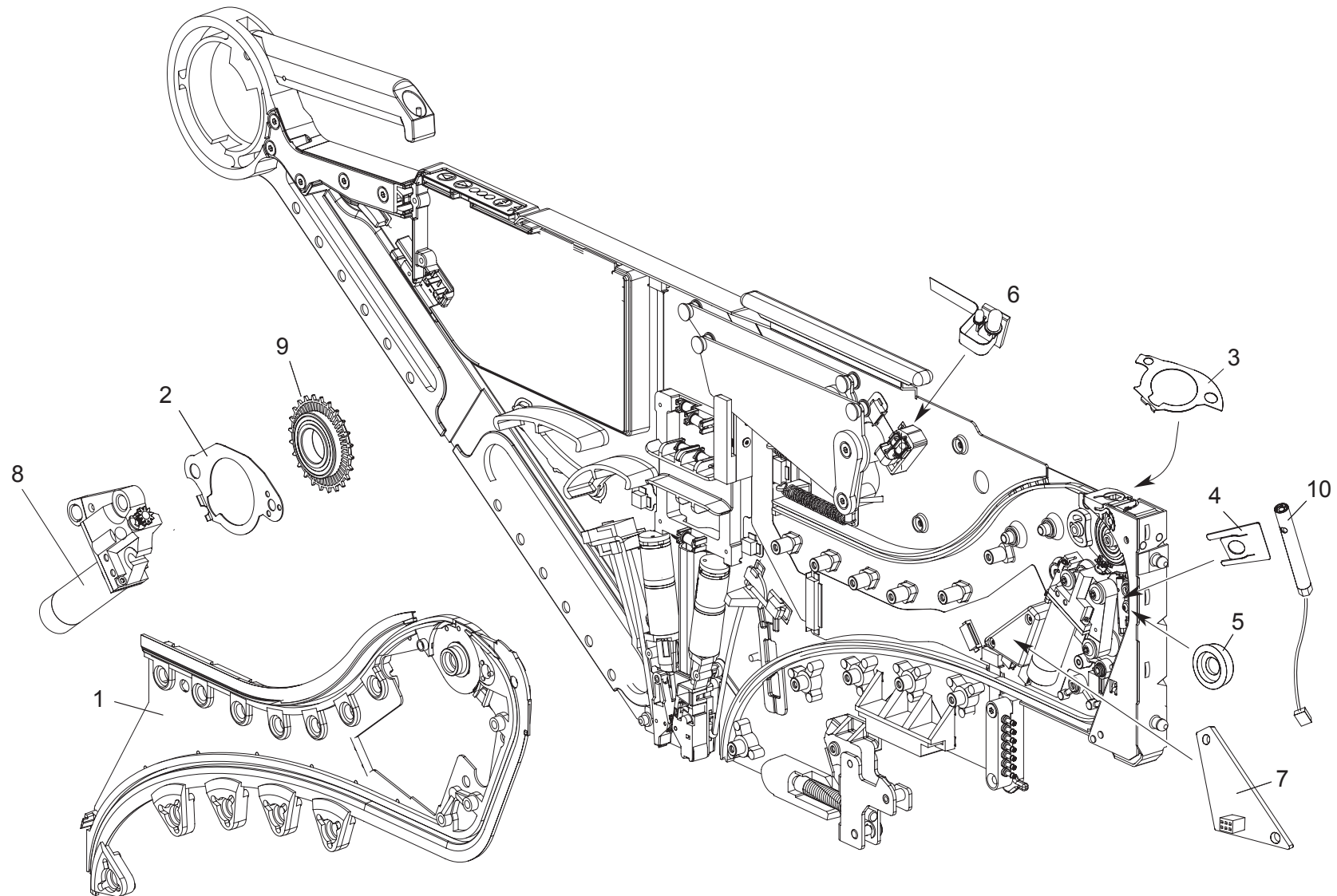
Base Plate continued






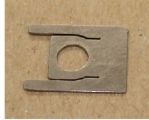


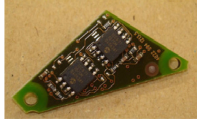
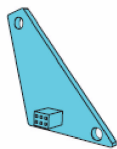
Current spare parts list, see <http://espares.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Base Plate (continued)					
10	9498 396 00224	Tension spring upper lane		1	Part of item no. 8
13	9498 396 00187	Guide block		1	
14	9498 396 00228	Side plate		1	
16	9498 396 00186	Contact block assy		1	
18	9498 396 01031	Sticker adjustment peel off plate		0	
19	9498 396 01380	Pictogram		1	
20	9498 396 00178	Sprocket wheel brake (upper lane/lower lane)		1	

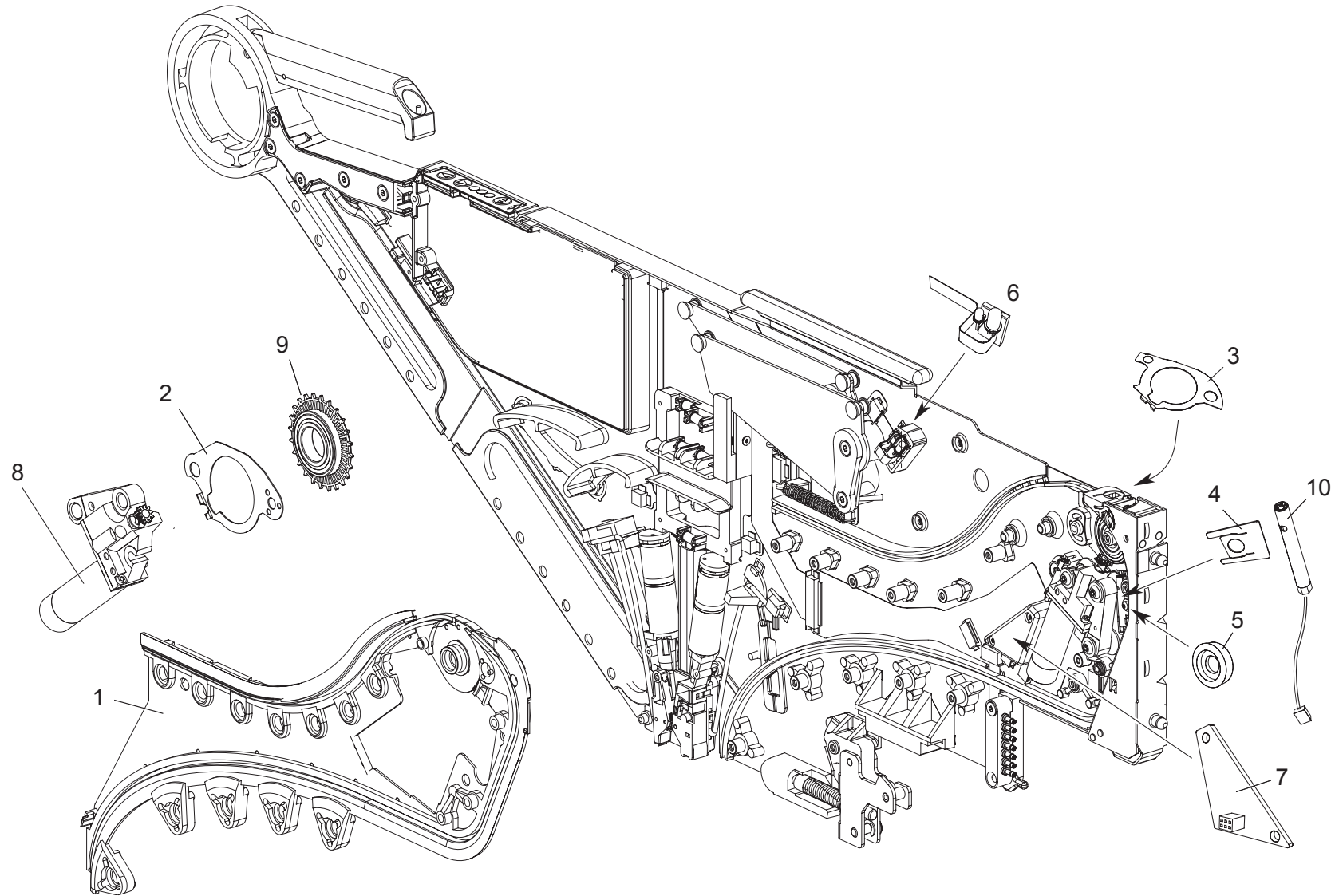
3.3.7 Indexing Mechanism








Current spare parts list, see <http://espare.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Indexing Mechanism					
1	9498 396 00225	Middle plate		1	
2	9498 396 00226	Support sheet lower lane		1	
3	9498 396 00185	Support sheet upper lane		1	
4	9498 396 00219	Sensor spring UL		1	
5	9498 396 00217	Distance bush		1	
6	9498 396 01382	Print nozzle catch		2	
7	9498 396 00216	Sprocket print 1.0		1	Green color For PA2657/00
7	9498 396 01918	Sprocket print 1.1		1	Blue color For PA2657/01 and newer

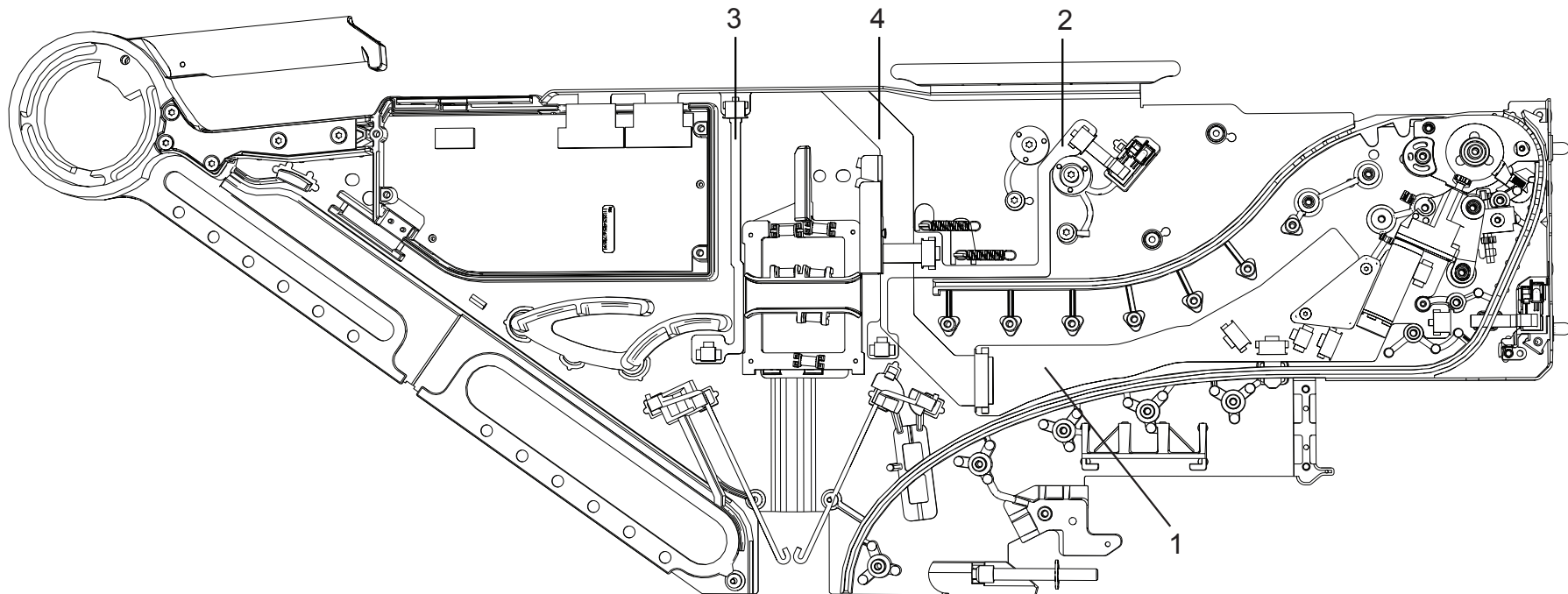
Indexing Mechanism continued



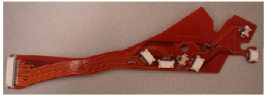



Current spare parts list, see <http://espare.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Indexing Mechanism (continued)					
8	9498 396 00184	Sprocket motor 1.0		2	Marked with 4022-594-1039x For PA2657/00
8	9498 396 01653	Sprocket motor 1.1		2	Marked with 4022-594-1713x For PA2657/01 and newer
9	9498 396 00222	Sprocket wheel assy 1.0		2	All teeth the same size For PA2657/00
9	9498 396 01659	Sprocket wheel assy 1.1		2	One short tooth For PA2657/01 and newer Available from Q1, 2008 onwards.
10	9498 396 00204	Inductive sensor		2	

3.3.8 Flex foils



Current spare parts list, see <http://espare.assembleon.com>

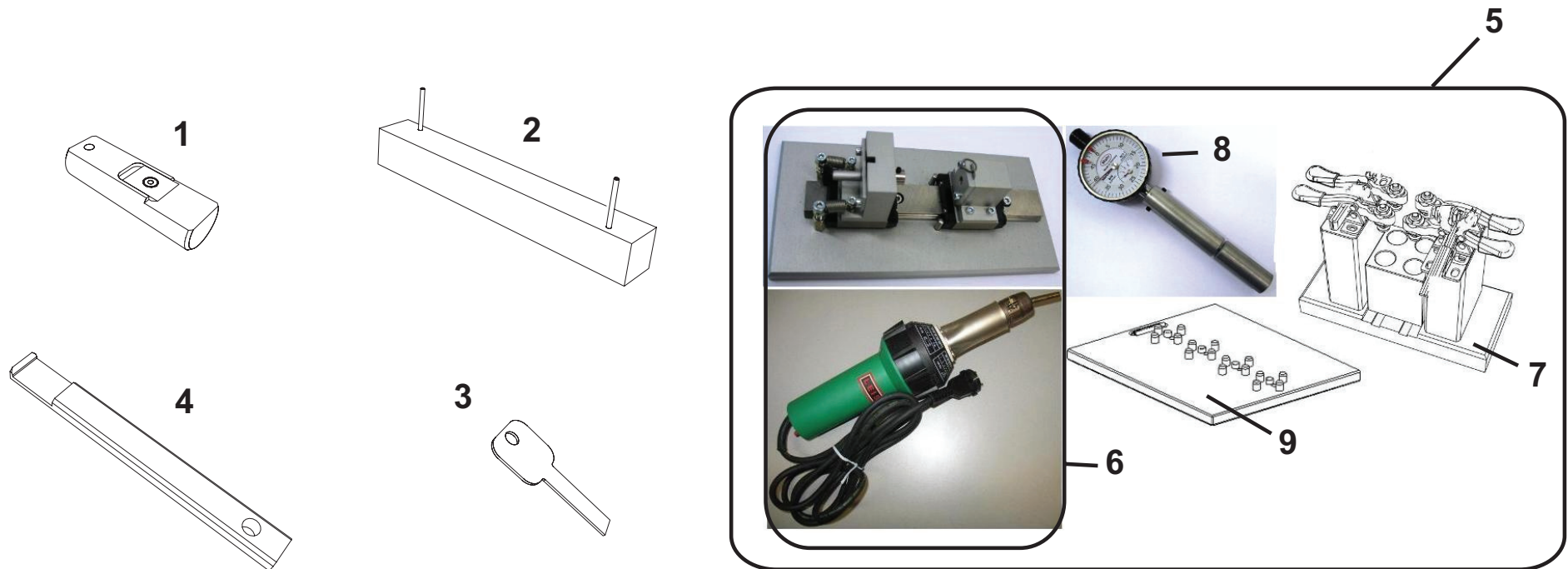
Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Flex foils					
1	9498 396 00205	Flex foil main 1/4		1	
2	9498 396 00206	Flex foil main 2/4		1	
3	9498 396 00207	Flex foil main 3/4		1	
4	9498 396 00208	Flex foil main 4/4		1	

3.3.9 Screws (no drawings available)


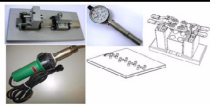

Current spare parts list, see <http://espares.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Screws					
1	9498 396 00246	SCREW PT 30X14	-	8	Standard packing unit: 25
2	9498 396 00245	SCREW PT 30X10	-	16	Standard packing unit: 25
3	9498 396 00248	SCREW PT 30X10.9	-	6	Standard packing unit: 10
4	9498 396 00244	SCREW PT 30X8	-	14	Standard packing unit: 25
5	9498 396 00247	SCREW PT 20X10	-	7	Standard packing unit: 25
6	9498 396 00242	SCREW PT 20X6	-	10	Standard packing unit: 25
7	9498 396 00243	SCREW PT 20X4	-	5	Standard packing unit: 10
8	9498 396 00199	CH SCR ST ZN M2X5	-	4	Standard packing unit: 1

3.3.10 Tools



Current spare parts list, see <http://espares.assembleon.com>

Item No.	Ordering code	Description	Picture	Quantity per module	Remarks
Tools					
1	9498 396 00525	Adjustment key nozzle catch upper lane		0	Tool to adjust nozzle catch upper lane
2	9498 396 00526	Removing tool nozzle catch upper lane		0	Tool to remove nozzle catch upper lane
3	9498 396 00524	Side plate opener		0	Tool to open the side plate
4	9498 396 01384	Lifter sprocket motor		0	Tool to lift the sprocket motor
5	9498-396-02270	Peel off unit rep. tools		0	SI-FDR-459 Available from Q1, 2008 onwards
6	9498-396-02271	Gear demounting tool		0	Part of item no. 19 Available from Q1, 2008 onwards
7	9498-396-02272	Motor shaft glue tool		0	Part of item no. 19 Available from Q1, 2008 onwards
8	9498-396-02273	Motor shaft measure tool		0	Part of item no. 19 Available from Q1, 2008 onwards
9	9498-396-02274	Housing mounting tool		0	Part of item no. 19 Available from Q1, 2008 onwards



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Option Manual

ITF-TTF Analysis tool

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Feeder analysis tool

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CHAPTER 1 Safety

1.1 General

For the correct and safe use of the feeder analysis tool, service personnel should follow generally accepted safety procedures. In addition, they must comply with the safety precautions as specified in this manual.

Where necessary, special warning and caution statements are used throughout this manual. These statements will be explained in this chapter.

Moreover, all warning and caution statements present on any sticker on the feeder analysis tool is explained in this chapter.

1.2 Personnel qualification

Operation, adjustment, maintenance and repair of the feeder analysis and verification tool may only be carried out by trained and qualified personnel who are aware of the hazards involved.

1.3 Caution and warning statements

1.3.1 Safety standards

The calibration tool meets the following CE-directives:

- IEC 60204 Low voltage directive
- EMC directive EN50081-2 and EN50082-2

This will be achieved by using CE certified modules (e.g. power supply, PC, camera etc.)

1.3.2 Electrical safety

when working on the feeder analyse and verification tool electrical system, always first switch off the main power button and remove the power cable at the back of the tool.

The wiring colours are in accordance with the following relevant standard:

- IEC 60204-1

1.4 General Introduction

This manual is intended to be a guideline for operating, handling and corrective repair by end-user repair shop, which own feeders. The Analysis tool is for repair of the intelligent tape feeder ITF-2 and TTF feeders. It cannot be used for other feeder types. The main benefit for the end-user is that with this tool he will be able to repair up to **97%** of all possible parts of the ITF-2 and TTF feeder and the ability to adjust the sensors of these feeders.

With the Analysis tool the following functions will be checked:

Function	ITF-2	TTF
Control board	X	X
Power supply	X	X
Select / Busy Line	X	X
Human Interface	X	X
Configuration switches	X	X
Peel-off motor	X	X
Nozzle detection	X	X
Index unit	X	X

FIGURE 1

1.5 Content of packing box







Item nr	Description	Remarks	Pictures
1	PC system	Included: mouse, keyboard and software + I/O cards, CAN card	
2	Monitor	17" flat screen	
3	Analysis plate		
4	Power & Communication cables	<ul style="list-style-type: none"> - 3 AC Power cables (1 x monitor, 1 x PC, 1 x Analysis plate) - 1 CAN cable (length 2m) - 1 RS 232 cable (length 2m) 	  
5	Image of PC SW on DVD		
6	Norton Ghost SW	Including documentation (to recover PC)	

FIGURE 2

CHAPTER 2 Setup

The setup for the Analysis tool is shown in [FIGURE 3](#). The parts of the Analysis tool are listed in [FIGURE 2](#).



FIGURE 3



FIGURE 4

ITF – TTF Analysis Tool

2.1 Analysis plate

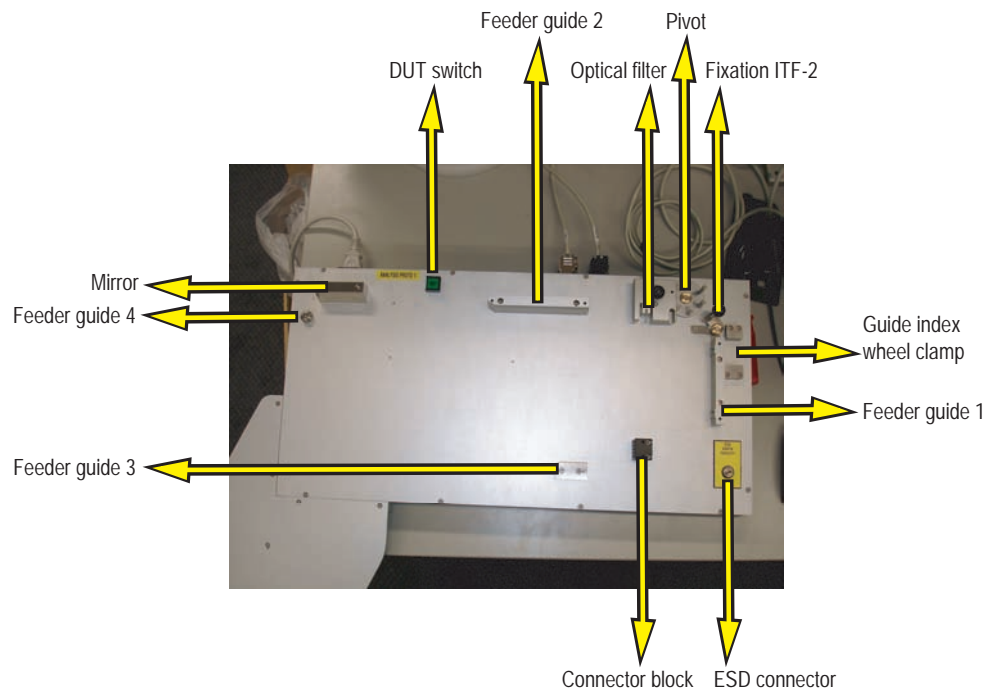


FIGURE 5 Overview of the Analysis tool.

2.2 Identification

All Analysis tools have been tested and are provided with an identification label as shown in [FIGURE 6](#)

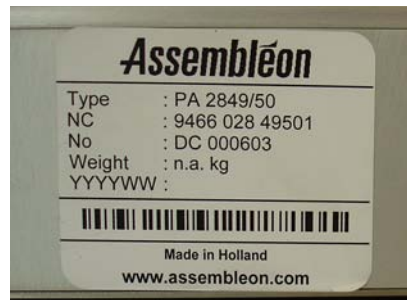


FIGURE 6 ID label

2.3 Installation

All necessary sw to run the Analysis tool is pre-installed.

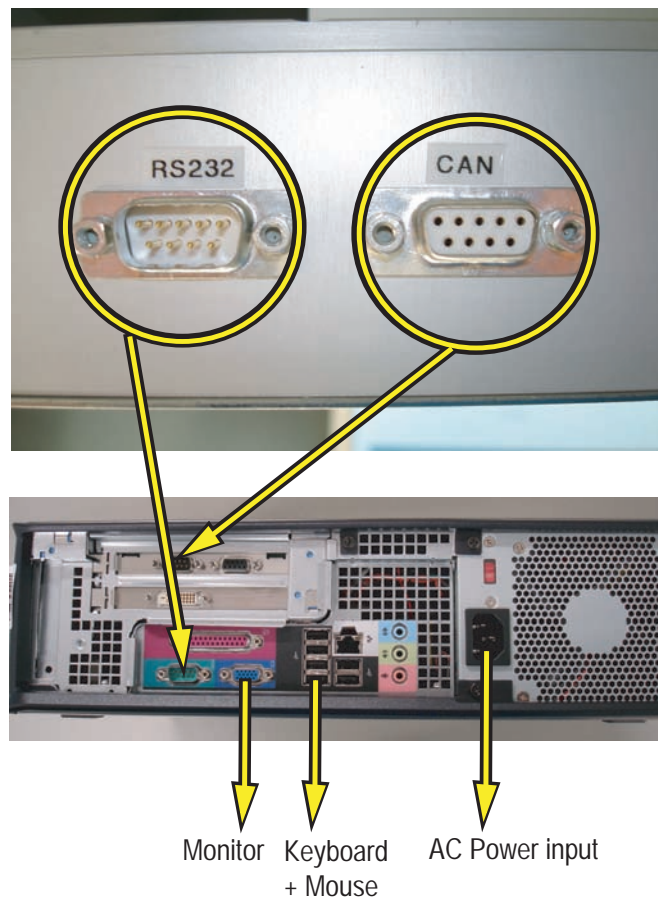


FIGURE 7

2.3.1 Input power requirements

The Analysis tool is designed to be used by an AC input voltage range of 85Vac to 264Vac and with a frequency range of 47 – 63 Hz.

The input power on the Analysis plate is protected by a fuse (1A slow).

2.3.2 Environmental requirements

The performance of the Analysis tool is guaranteed in a temperature range of +15°C to +30°C and with a relative humidity between 50 and 95 % (no condensation).

CHAPTER 3 Feeder Analysis

The feeder range in the table below are supported by the Analysis tool;

Ordering code	Description
PA2657/xx	TTF 8 mm
PA2654/0x	ITF2 8 mm
PA2654/1x	ITF2 12 mm
PA2654/2x	ITF2 16 mm
PA2654/3x	ITF2 24 mm
PA2654/4x	ITF2 32 mm
PA2654/5x	ITF2 44 mm
PA2654/6x	ITF2 56 mm
PA2654/7x	ITF2 12mm small version

FIGURE 8

3.1 Workflow

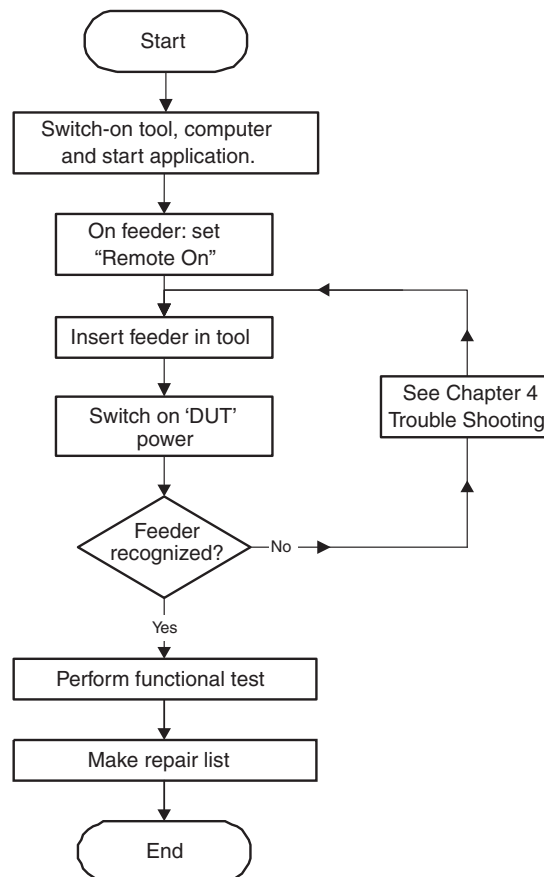
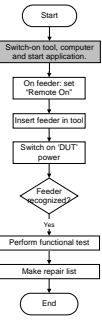

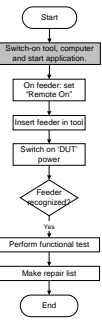

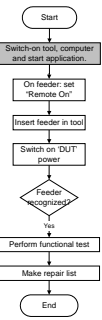

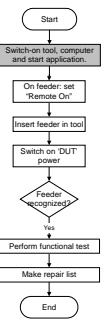
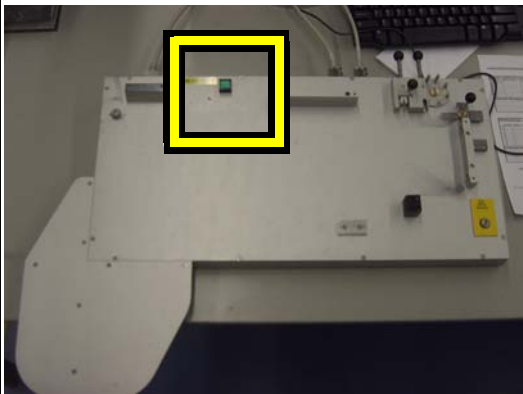
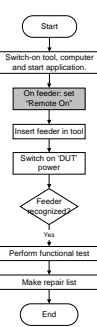
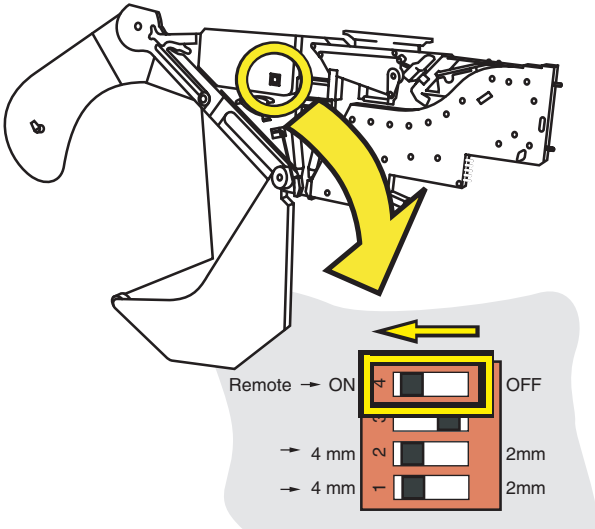
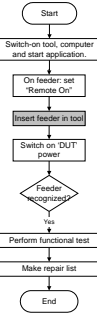
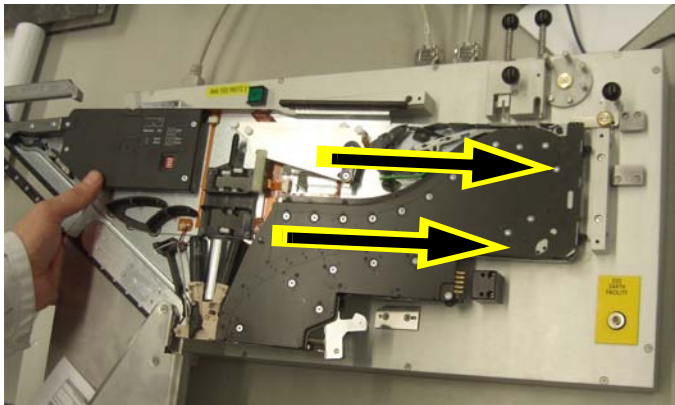
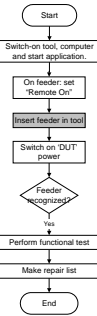
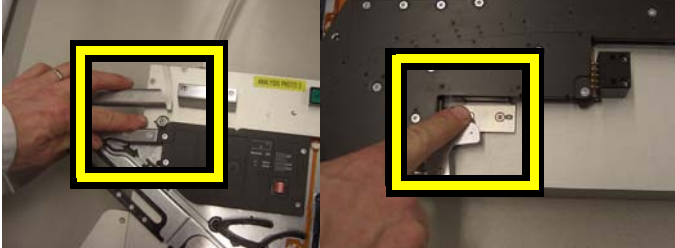
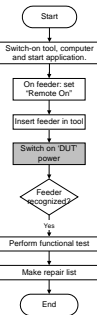
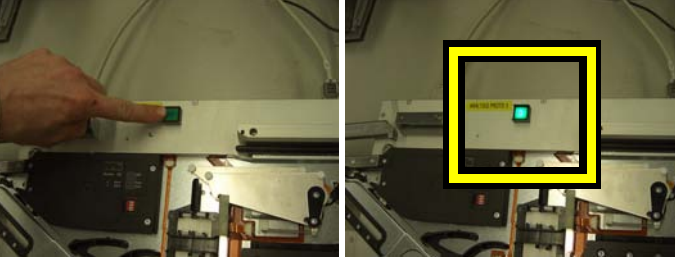


FIGURE 9

Workflow analyse process

3.2 Analysis of a TTF feeder

	<ul style="list-style-type: none"> •Switch on the computer 	
	<ul style="list-style-type: none"> •Start up the program with the icon 'ITF-TTF Analysis tool' 	
	<ul style="list-style-type: none"> •Switch on the 'Mains switch" on the tool 	
	<ul style="list-style-type: none"> •Make sure the 'DUT' Power of the tool is switched off (The switch is NOT illuminated). 	

	<ul style="list-style-type: none"> Set the remote switch to "ON" on the TTF feeder 	
	<ul style="list-style-type: none"> Place the TTF feeder to be analysed in the 'tool-table' 	
	<ul style="list-style-type: none"> Check if the feeder is placed correctly 	
	<ul style="list-style-type: none"> Switch on the 'DUT-power' of the tool. The switch becomes illuminated. 	

	<p>•Check if feeder 'Type' and 'Number' appears.</p>	
	<p>•Select 'Start'</p>	
	<p>•Follow tests on screen</p>	



	<ul style="list-style-type: none"> •Set switch in other position and back •Wait for 'BEEP', set next switch •Repeat until all OK •If NOT OK select 'waiting' and 'reject' 	<p>Remote switch Local mode pitch switch</p> <p>Both on/off detected <input checked="" type="checkbox"/> Waiting</p> <p>Both on/off detected <input checked="" type="checkbox"/> Ok</p> <p>All pitches detected <input checked="" type="checkbox"/> Ok <input checked="" type="checkbox"/> Ok</p> <p>Not OK : Select <input checked="" type="checkbox"/> Waiting and <input type="button" value="Reject"/></p>																																																																																																																																																
	<ul style="list-style-type: none"> •Move lever arm 1 down (wait one second) •Release lever arm •Repeat 1x •If NOT OK select 'waiting' and 'reject' •Same for lever arm 2 	<p>Lever arm 1</p> <p>OK <input checked="" type="checkbox"/> OK <input checked="" type="checkbox"/> OK</p> <p>Not OK: Select <input checked="" type="checkbox"/> Waiting <input type="button" value="Reject"/></p>																																																																																																																																																
	<ul style="list-style-type: none"> •Follow tests on screen 	<p>ITF-TTF Analysis Tool</p> <p>Identification: Feeder type TTF-Ses, Serial number 1013948, Software version V3.50</p> <p>Counters: Lane 1 (upper) 1599, Lane 2 (lower) 2281</p> <table border="1"> <thead> <tr> <th>Id</th> <th>Module</th> <th>Action</th> <th>Unit</th> <th>Expected result</th> <th>Status</th> <th>Upper lane</th> <th>Lower lane</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Control board</td> <td>EEPROM parameters</td> <td></td> <td>Set to default</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>2</td> <td>Power supply</td> <td>Power supply current</td> <td>mA</td> <td>15-100</td> <td><input checked="" type="checkbox"/></td> <td>89</td> <td></td> </tr> <tr> <td>3</td> <td>Select/busy line</td> <td>Internal wiring</td> <td></td> <td>Select follows busy</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>4</td> <td></td> <td>External connection</td> <td></td> <td>Select line detected</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>5</td> <td></td> <td>Backward button</td> <td></td> <td>Button detected</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>6</td> <td></td> <td>Forward button</td> <td></td> <td>Button detected</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>7</td> <td>Human interface</td> <td>Line button</td> <td></td> <td>Button detected</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>8</td> <td></td> <td>LEDs</td> <td></td> <td>Acting as walking light</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>9</td> <td>Configuration switches</td> <td>Remote switch</td> <td></td> <td>Both on/off detected</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td></td> </tr> <tr> <td>10</td> <td></td> <td>Local mode pitch switch</td> <td></td> <td>All pitches detected</td> <td><input checked="" type="checkbox"/></td> <td>Ok</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>11</td> <td>Peeloff motor</td> <td>Motor current</td> <td>mA</td> <td>35-150</td> <td><input checked="" type="checkbox"/></td> <td>51</td> <td>45</td> </tr> <tr> <td>12</td> <td></td> <td>Buffer sensors</td> <td></td> <td>Motor on</td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>13</td> <td>Nozzle detection</td> <td>LED current</td> <td>mA</td> <td></td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>14</td> <td></td> <td>Motor current forward</td> <td>mA</td> <td></td> <td><input checked="" type="checkbox"/></td> <td></td> <td></td> </tr> <tr> <td>15</td> <td>Index unit</td> <td>Tooth sequence</td> <td></td> <td>20-135</td> <td><input checked="" type="checkbox"/></td> <td>76</td> <td>58</td> </tr> <tr> <td>16</td> <td></td> <td>Min/max tooth pitch</td> <td></td> <td>9-23</td> <td><input checked="" type="checkbox"/></td> <td>Busy</td> <td>Not done</td> </tr> <tr> <td>17</td> <td></td> <td>Min/max tooth width</td> <td></td> <td>445-470</td> <td><input checked="" type="checkbox"/></td> <td>Not done</td> <td>Not done</td> </tr> </tbody> </table>	Id	Module	Action	Unit	Expected result	Status	Upper lane	Lower lane	1	Control board	EEPROM parameters		Set to default	<input checked="" type="checkbox"/>	Ok		2	Power supply	Power supply current	mA	15-100	<input checked="" type="checkbox"/>	89		3	Select/busy line	Internal wiring		Select follows busy	<input checked="" type="checkbox"/>	Ok		4		External connection		Select line detected	<input checked="" type="checkbox"/>	Ok		5		Backward button		Button detected	<input checked="" type="checkbox"/>	Ok		6		Forward button		Button detected	<input checked="" type="checkbox"/>	Ok		7	Human interface	Line button		Button detected	<input checked="" type="checkbox"/>	Ok		8		LEDs		Acting as walking light	<input checked="" type="checkbox"/>	Ok		9	Configuration switches	Remote switch		Both on/off detected	<input checked="" type="checkbox"/>	Ok		10		Local mode pitch switch		All pitches detected	<input checked="" type="checkbox"/>	Ok	<input checked="" type="checkbox"/>	11	Peeloff motor	Motor current	mA	35-150	<input checked="" type="checkbox"/>	51	45	12		Buffer sensors		Motor on	<input checked="" type="checkbox"/>			13	Nozzle detection	LED current	mA		<input checked="" type="checkbox"/>			14		Motor current forward	mA		<input checked="" type="checkbox"/>			15	Index unit	Tooth sequence		20-135	<input checked="" type="checkbox"/>	76	58	16		Min/max tooth pitch		9-23	<input checked="" type="checkbox"/>	Busy	Not done	17		Min/max tooth width		445-470	<input checked="" type="checkbox"/>	Not done	Not done
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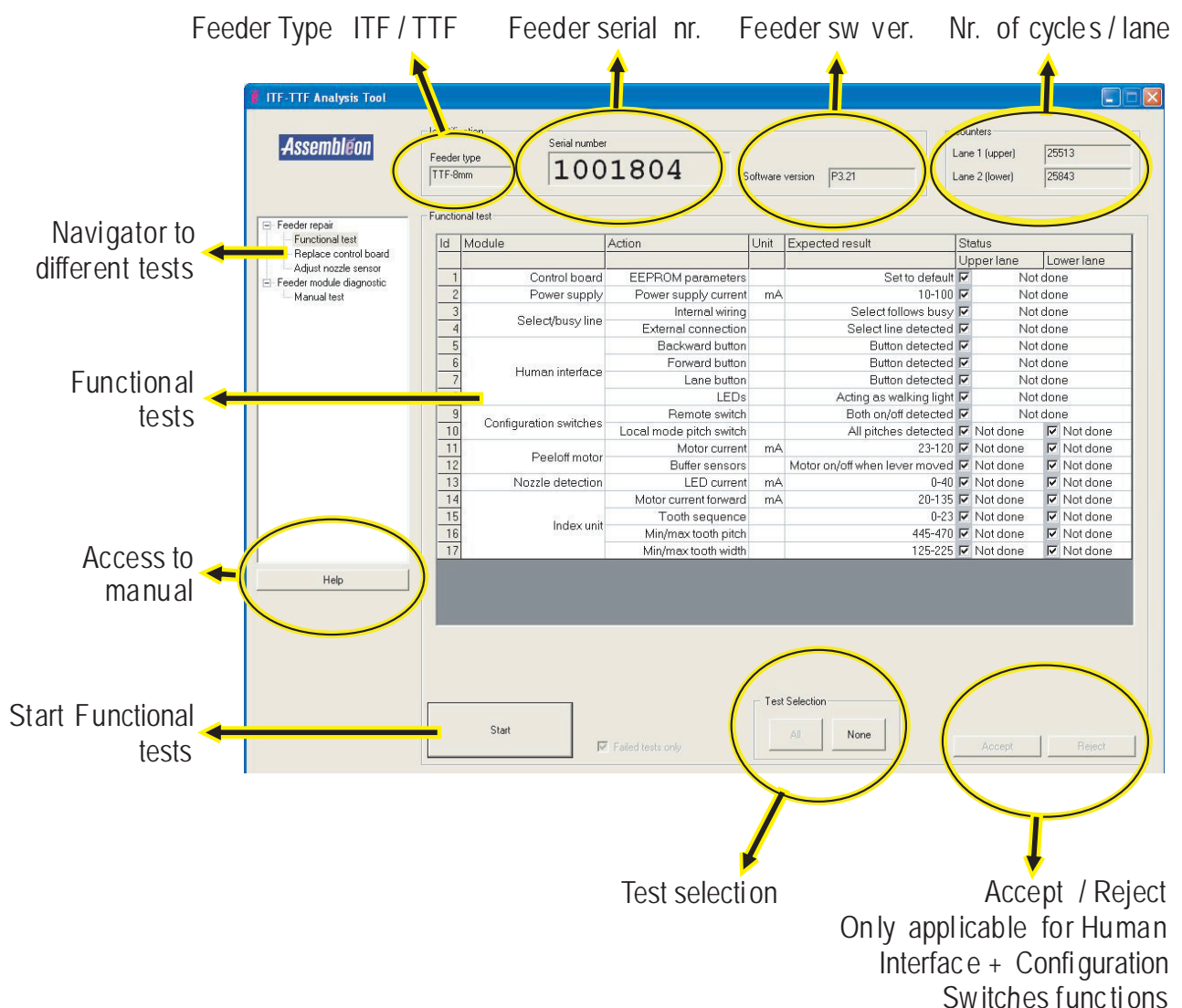
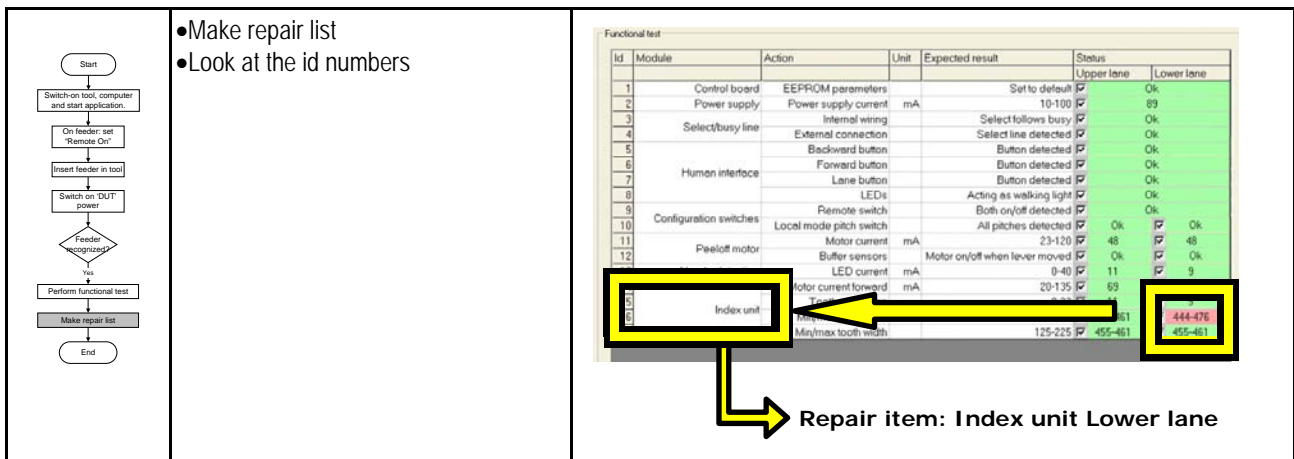


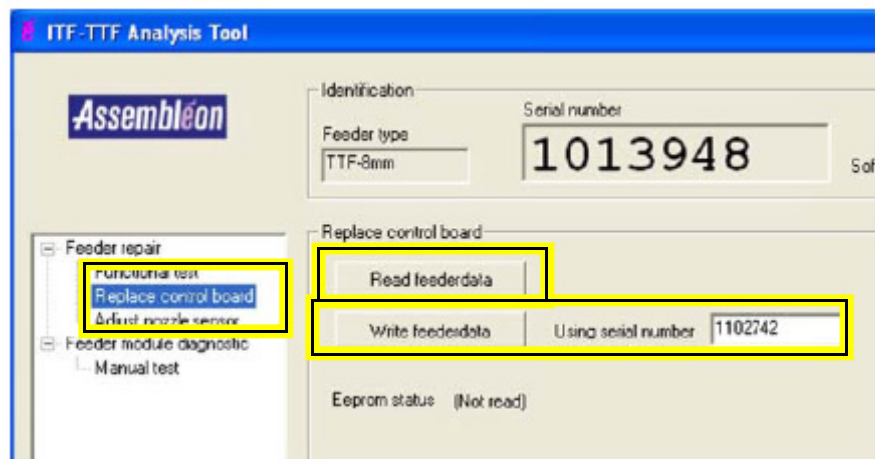
FIGURE 10

Functional tests

3.2.1 Replace controller board

In case a controller board needs to be replaced, this can be done with the function 'Replaced control board'.

- Before a controller board can be replaced, a backup needs to be made of the feeder data (incl. calibration data). Select the button 'Read Feederdata' to make a backup.
- After the controller board is replaced, the serial number of the feeder needs to be entered in the window 'using serial number'.
- Now the feeder data can be restored. Select the button 'Write Feederdata' to restore the data.



Controller board

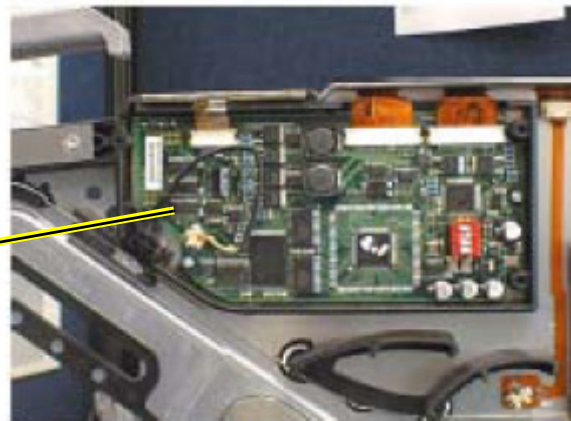
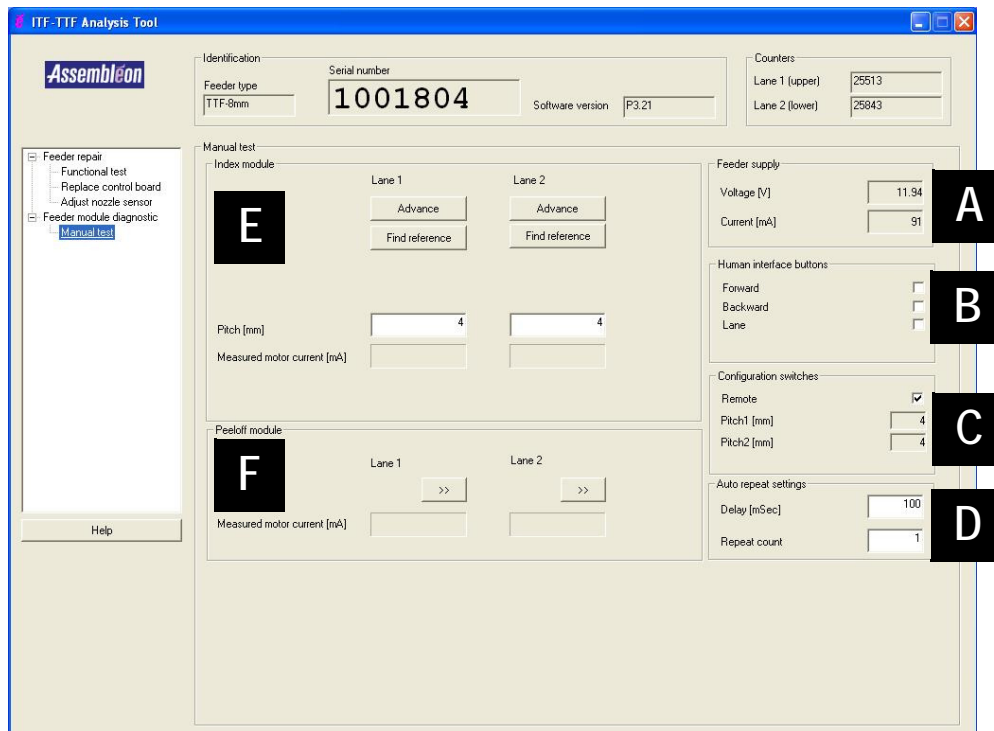


FIGURE 11

Replace controller board

3.2.2 Manual test TTF



Index motor + peel-off motor will make 1 step. The nr. of steps + the length of the steps can be adjusted with Auto repeat settings (D).



Index motor + peel-off motor are running to measure the current.



Run Index motor in reverse or forward direction.

FIGURE 12 Manual test TTF

A Power consumption of the feeder.

Here the voltage and current is displayed for the feeder that is analysed. Value of the current will increase when one of the motors is activated.

Voltage: Min. 11.6 V

Max. 12.4 V

Current: When no functions are activated (no load)
the current consumption is: 80-100 mA

B Buttons on Human Interface.

When one of the buttons on the feeder is pressed, the related box will be highlighted.

C Position of configuration switches.

The position of the configuration switches are shown here.

D Settings for test Index Module (E).

Delay: Waiting time between each index.

Repeat count: number of indexes.

E Test Index Module

Pitch can be set to 2 or 4 mm.

During test the current consumption is measured (see A).

F Test Peel-off module.

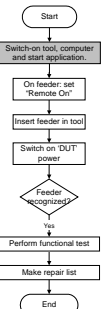
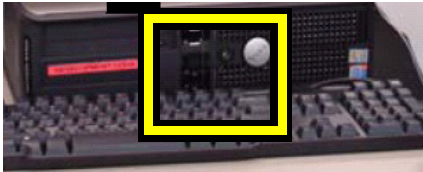
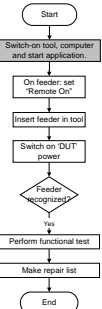

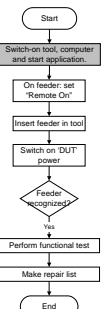
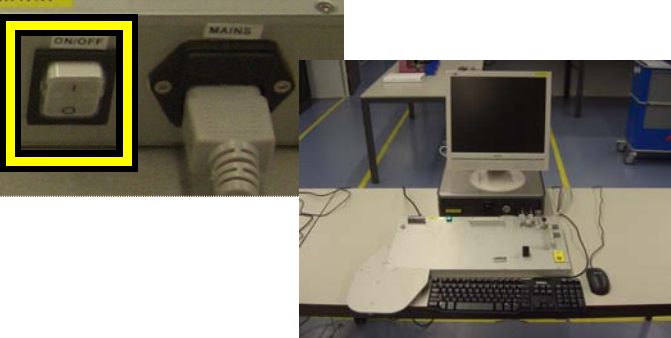
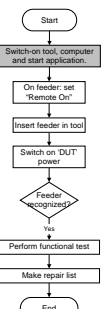
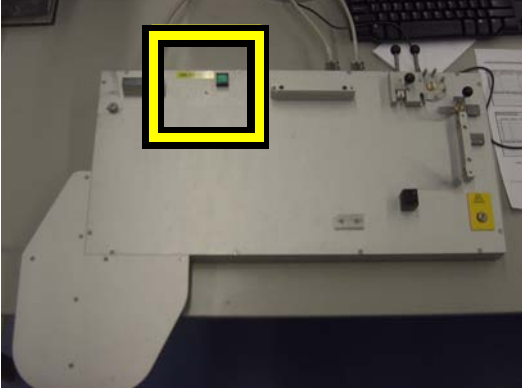
During test the current consumption is measured (see A).

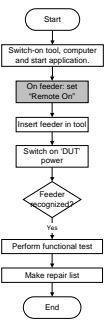
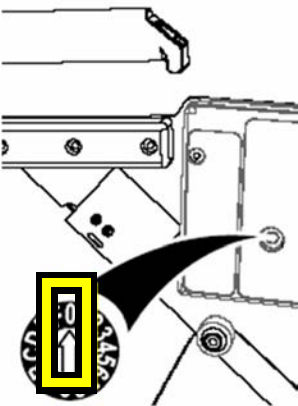
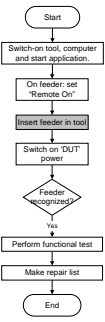
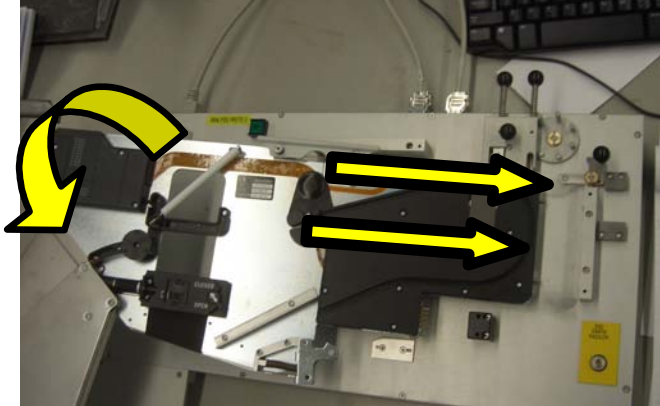
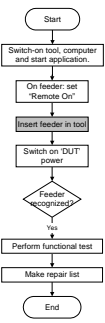
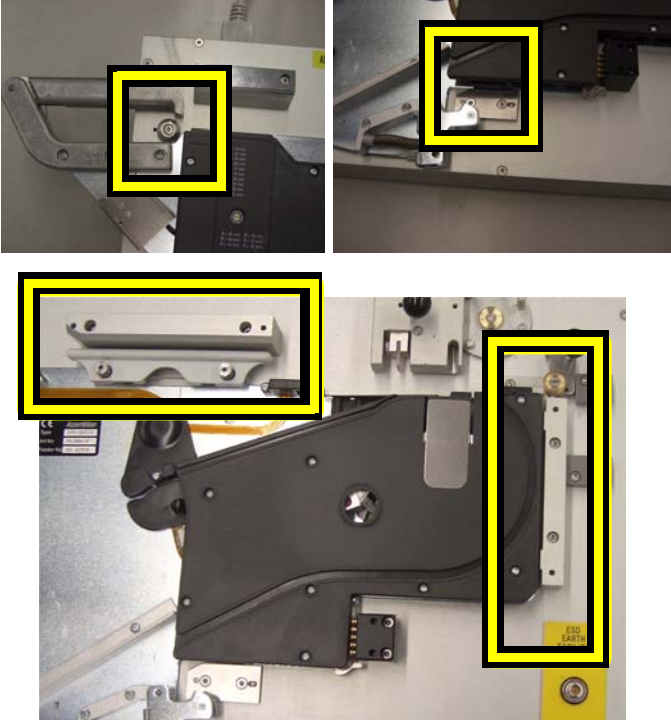
REMARK: A realistic value for the current can only be achieved when a test is activated for some seconds (e.g. 2-3 Sec.)

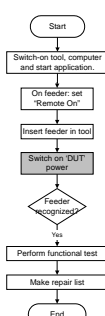

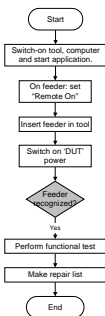
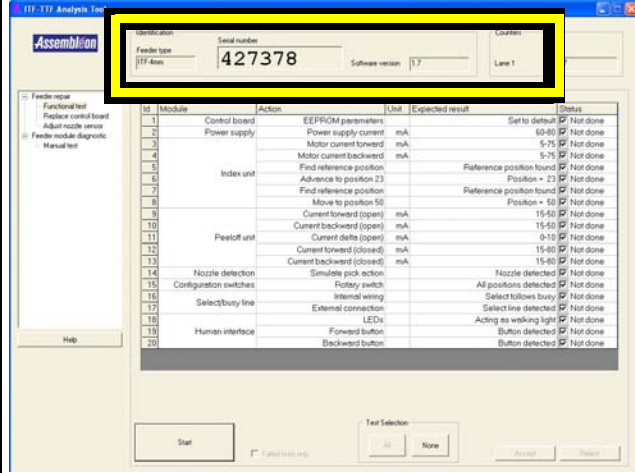
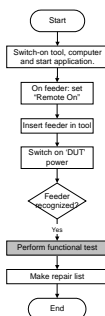
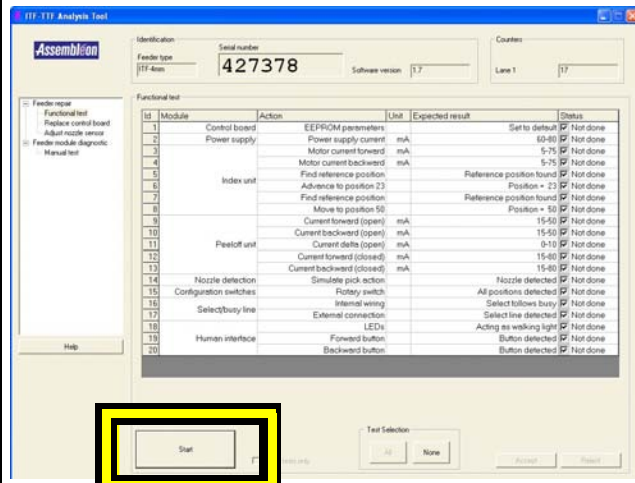
Item	Description	Min Level	Max Level	Remark
1	Power Supply	80 mA	100 mA	After Power On, all motors off and Green LED blinking
2	Index motor forward	20 mA	135 mA	No load / without tape
3	Peel-off motor forward	23 mA	120 mA	
4	Nozzle sensor LED	0 mA	40 mA	
5	Nozzle sensor ambient light	0 %	20 %	
6	Sprocket tooth Pitch	435 incr	490 incr	
7	Sprocket tooth Width	100 incr	250 incr	

FIGURE 13

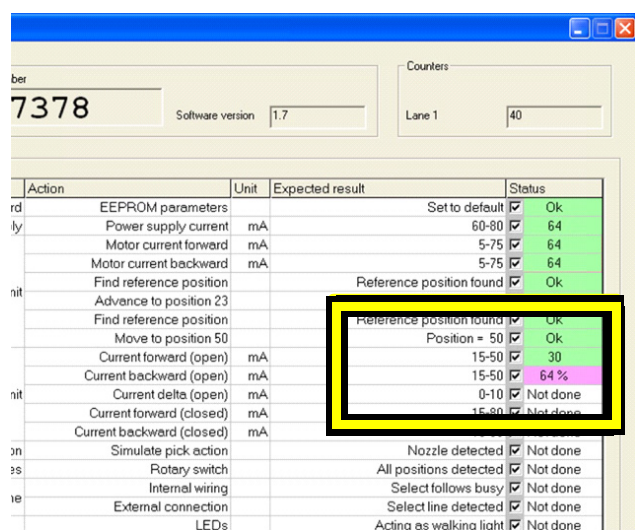
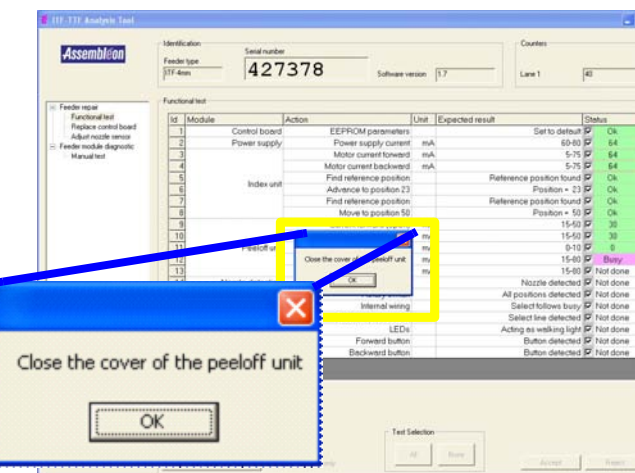
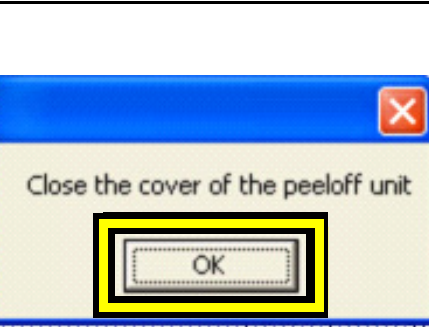
3.3 Analysis of a ITF-2 feeder

	<ul style="list-style-type: none"> •Switch on the computer 	
	<ul style="list-style-type: none"> •Start up the program with the icon 'ITF-TTF Analysis tool' 	
	<ul style="list-style-type: none"> •Switch on the 'Mains switch' on the tool 	
	<ul style="list-style-type: none"> •Make sure the 'DUT Power' of the tool is switched off. The switch is NOT illuminated. 	

	<p>•Set the switch to "0" on the ITF feeder</p>	
	<p>•Place the ITF feeder to be analysed in the 'tool-table'</p>	
	<p>•Check if the feeder is placed correctly</p>	

 <pre> graph TD Start([Start]) --> SwitchOn[Switch-on tool, computer and start application.] SwitchOn --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> SwitchOnDUT[Switch on 'DUT' power] SwitchOnDUT --> FeederRecognized{Feeder recognized?} FeederRecognized -- Yes --> PerformTest[Perform functional test] PerformTest --> MakeRepairList[Make repair list] MakeRepairList --> End([End]) </pre>	<ul style="list-style-type: none"> •Switch on the 'DUT-power' of the tool. The switch becomes illuminated. 	
 <pre> graph TD Start([Start]) --> SwitchOn[Switch-on tool, computer and start application.] SwitchOn --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> SwitchOnDUT[Switch on 'DUT' power] SwitchOnDUT --> FeederRecognized{Feeder recognized?} FeederRecognized -- Yes --> PerformTest[Perform functional test] PerformTest --> MakeRepairList[Make repair list] MakeRepairList --> End([End]) </pre>	<ul style="list-style-type: none"> •Check if feeder 'Type' and 'Number' appears. 	
 <pre> graph TD Start([Start]) --> SwitchOn[Switch-on tool, computer and start application.] SwitchOn --> OnFeeder[On feeder: set "Remote On"] OnFeeder --> InsertFeeder[Insert feeder in tool] InsertFeeder --> SwitchOnDUT[Switch on 'DUT' power] SwitchOnDUT --> FeederRecognized{Feeder recognized?} FeederRecognized -- Yes --> PerformTest[Perform functional test] PerformTest --> MakeRepairList[Make repair list] MakeRepairList --> End([End]) </pre>	<ul style="list-style-type: none"> •Select 'Start' 	

	<p>•Follow tests on screen</p>	<table border="1"> <thead> <tr> <th>Action</th> <th>Unit</th> <th>Expected result</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>EEPROM parameters</td> <td></td> <td>Set to default</td> <td>Ok</td> </tr> <tr> <td>Power supply current</td> <td>mA</td> <td>60-80</td> <td>64</td> </tr> <tr> <td>Motor current forward</td> <td>mA</td> <td>5-75</td> <td>16 %</td> </tr> <tr> <td>Motor current backward</td> <td>mA</td> <td>5-75</td> <td>Not done</td> </tr> <tr> <td>Find reference position</td> <td></td> <td>Reference position found</td> <td>Not done</td> </tr> <tr> <td>Advance to position 23</td> <td></td> <td>Reference position found</td> <td>Not done</td> </tr> <tr> <td>Find reference position</td> <td></td> <td>Reference position found</td> <td>Not done</td> </tr> <tr> <td>Move to position 50</td> <td></td> <td>Position = 50</td> <td>Not done</td> </tr> <tr> <td>Current forward (open)</td> <td>mA</td> <td>15-50</td> <td>Not done</td> </tr> <tr> <td>Current backward (open)</td> <td>mA</td> <td>15-50</td> <td>Not done</td> </tr> <tr> <td>Current delta (open)</td> <td>mA</td> <td>0-10</td> <td>Not done</td> </tr> <tr> <td>Current forward (closed)</td> <td>mA</td> <td>15-80</td> <td>Not done</td> </tr> <tr> <td>Current backward (closed)</td> <td>mA</td> <td>15-80</td> <td>Not done</td> </tr> <tr> <td>Simulate pick action</td> <td></td> <td>Nozzle detected</td> <td>Not done</td> </tr> <tr> <td>Rotary switch</td> <td></td> <td>All positions detected</td> <td>Not done</td> </tr> <tr> <td>Internal wiring</td> <td></td> <td>Select follows busy</td> <td>Not done</td> </tr> </tbody> </table>	Action	Unit	Expected result	Status	EEPROM parameters		Set to default	Ok	Power supply current	mA	60-80	64	Motor current forward	mA	5-75	16 %	Motor current backward	mA	5-75	Not done	Find reference position		Reference position found	Not done	Advance to position 23		Reference position found	Not done	Find reference position		Reference position found	Not done	Move to position 50		Position = 50	Not done	Current forward (open)	mA	15-50	Not done	Current backward (open)	mA	15-50	Not done	Current delta (open)	mA	0-10	Not done	Current forward (closed)	mA	15-80	Not done	Current backward (closed)	mA	15-80	Not done	Simulate pick action		Nozzle detected	Not done	Rotary switch		All positions detected	Not done	Internal wiring		Select follows busy	Not done
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Start

Switch on tool, computer and start application.

On feeder: set "Remote On"

Insert feeder in tool

Switch on "DUT" power

Feeder recognized?

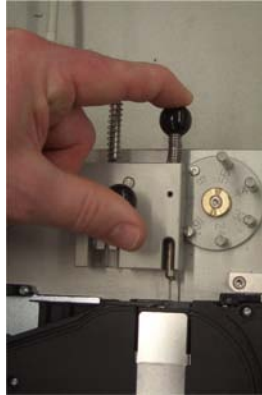
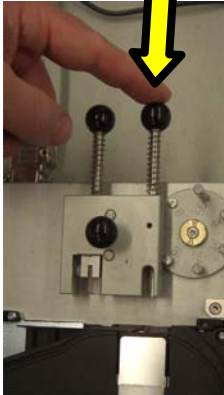
Yes

Perform functional test


Make repair list

End

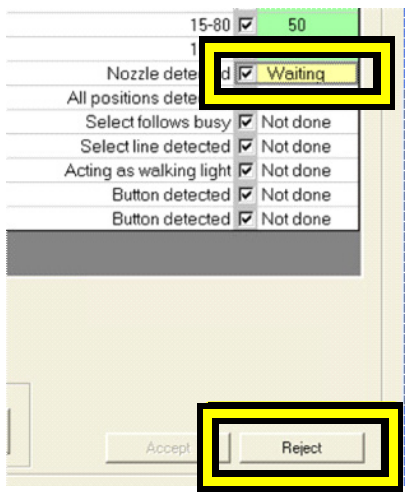
- Push 'Needle' down
- Look if the test is ok
- If the test is not ok:
- Select the test
- Select 'reject'



OK



Not OK : Select



Start

Switch on tool, computer and start application.

On feeder: set "Remote On"

Insert feeder in tool

Switch on "DUT" power

Feeder recognized?

Yes

Perform functional test

Make repair list

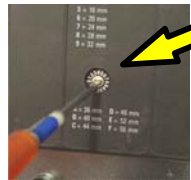
End

- Turn index switch
- If the test is not ok:
- Select the test
- Select 'reject'

simulate pick action

Rotary switch

Internal wiring



All positions detected☒ >>0<<

Set switch in next position

Wait for 'BEEP', set next position

Repeat until all ok

All positions detected☒ Ok

Not OK : Select

Nozzle detected☒ OK

All positions detected☒ >>9<<

Select follows busy☒ Not done

and

Reject

4022 591 91792
07.02

Option Manual
ITF-TTF Analysis tool

25

	<ul style="list-style-type: none"> •Human interface LEDs •Look at the LED •Select 'inspect' •Select 'accept' or 'reject' 																																																																																																																															
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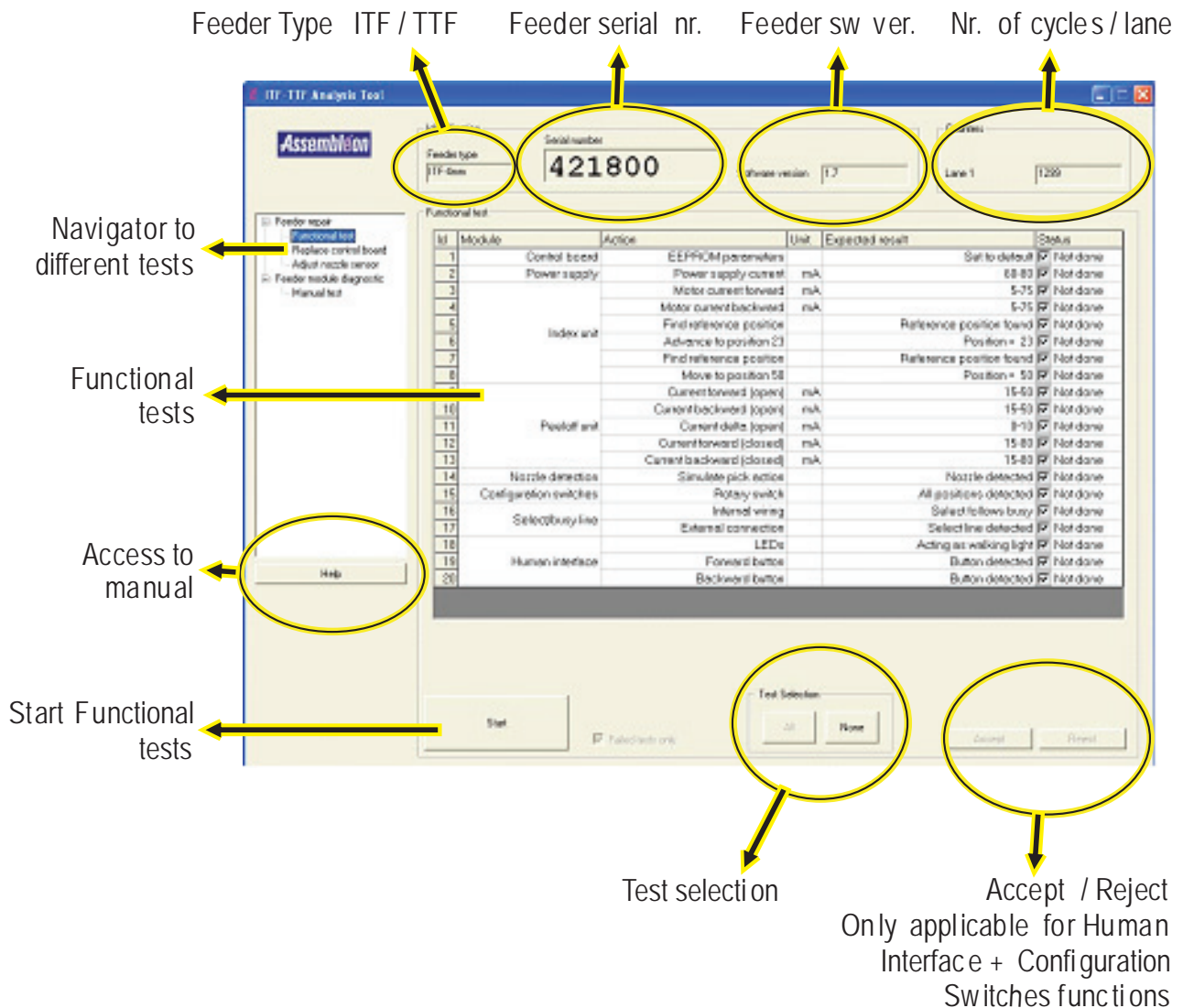


FIGURE 14

Functional tests

3.3.1 Replace controller board and adjust nozzle sensor

In case a controller board needs to be replaced, this can be done with the function 'Replaced control board'.

- Before a controller board can be replaced, a backup needs to be made of the feeder data (incl. calibration data). Select the button 'Read Feederdata' to make a backup.
- After the controller board is replaced, the serial number of the feeder needs to be entered in the window 'using serial number'.
- Now the feeder data can be restored. Select the button 'Write Feederdata' to restore the data.
- After the controller board is replaced, the index sensor needs to be readjusted.

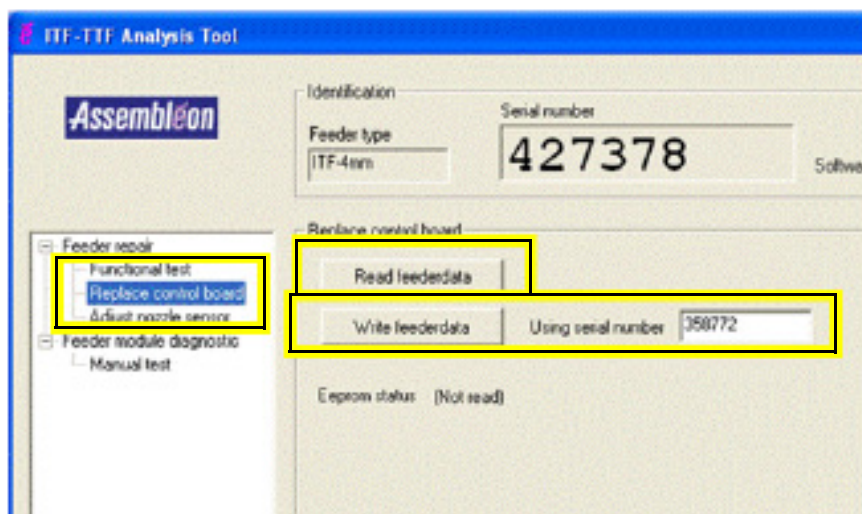


FIGURE 15

Replace controller board

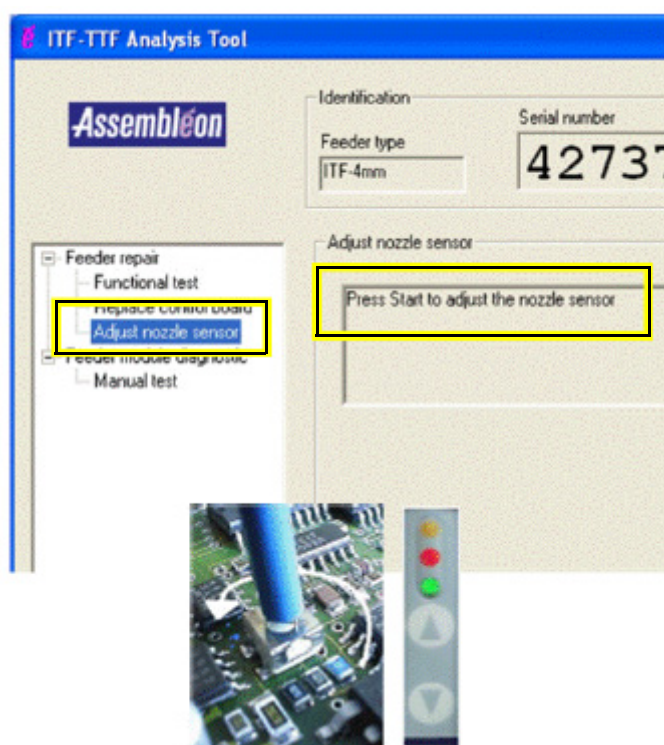
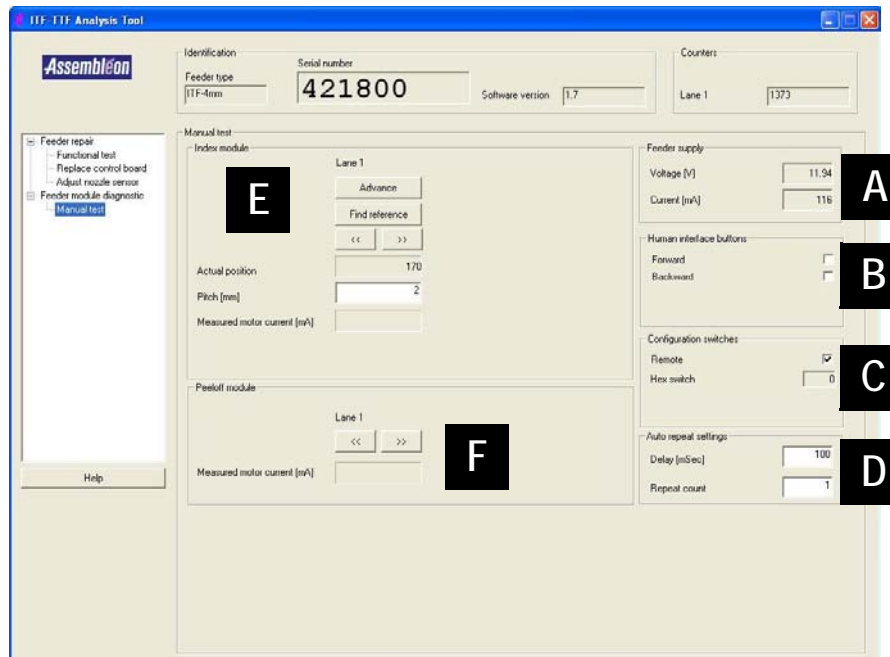


FIGURE 16

Adjust nozzle sensor

3.3.2 Manual test ITF



Index motor + peel-off motor will make 1 step. The nr. of steps + the length of the steps can be adjusted with Auto repeat settings (D).



Index motor + peel-off motor are running to measure the current.



Run Index motor in reverse or forward direction.

FIGURE 17

Manual test ITF

A Power consumption of the feeder.

Here the voltage and current is displayed for the feeder that is analysed. Value of the current will increase when one of the motors is activated.

Voltage: Min. 11.6 V

Max. 12.4 V

Current: When no functions are activated (no load)
the current consumption is: 60-80 mA

B Buttons on Human Interface.

When one of the buttons on the feeder is pressed, the related box will be highlighted.

C Position of configuration switches.

The position of the configuration switches are shown here.

D Settings for test Index Module (E).

Delay: Waiting time between each index.

Repeat count: number of indexes.

E Test Index Module

Pitch can be set to 2 or 4mm.

During test the current consumption is measured (see A).

F Test Peel-off module.

During test the current consumption is measured (see A).

REMARK: A realistic value for the current can only be achieved when a test is activated for some seconds (e.g. 2-3 Sec.)

Item	Description	Min Level	Max Level	Remark
1	Power Supply	60 mA	80 mA	After Power On, all motors off nozzle sensor off, Sprocket sensor off and Green LED blinking.
2	Index motor forward	5 mA	75 mA	No load / without tape
3	Index motor reverse	5 mA	75 mA	
4	Peel-off motor forward, opened front-plate	15 mA	50 mA	
5	Peel-off motor reverse, opened front-plate	15 mA	50 mA	
6	Peel-off motor forward, closed front-plate	15 mA	80 mA	
7	Peel-off motor reverse, closed front-plate	15 mA	80 mA	

FIGURE 18

CHAPTER 4 Installation software

4.1 Recover after software crash

In case of a software crash, there is a possibility to recover the complete system. This can be done with the backup of the image that is delivered with the Analysis Tool.

For all deliveries with PA2849/50, DC number 654, and newer, the backup image of the software can be found on the inside of the computer cover.



FIGURE 19

Software image on inside of computer cover

The recover procedure can be found in the *Norton Ghost User Guide* (page 68, *Recovering your computer*) that is delivered with the Analysis Tool.

4.2 Complete software installation

After a hardware change of the PC (e.g. new harddisk) it is NOT possible to recover the software with the image as described above. In this case a complete software installation needs to be performed.

Contact your local Assembléon Customer Support organization for more details.

CHAPTER 5 Trouble Shooting

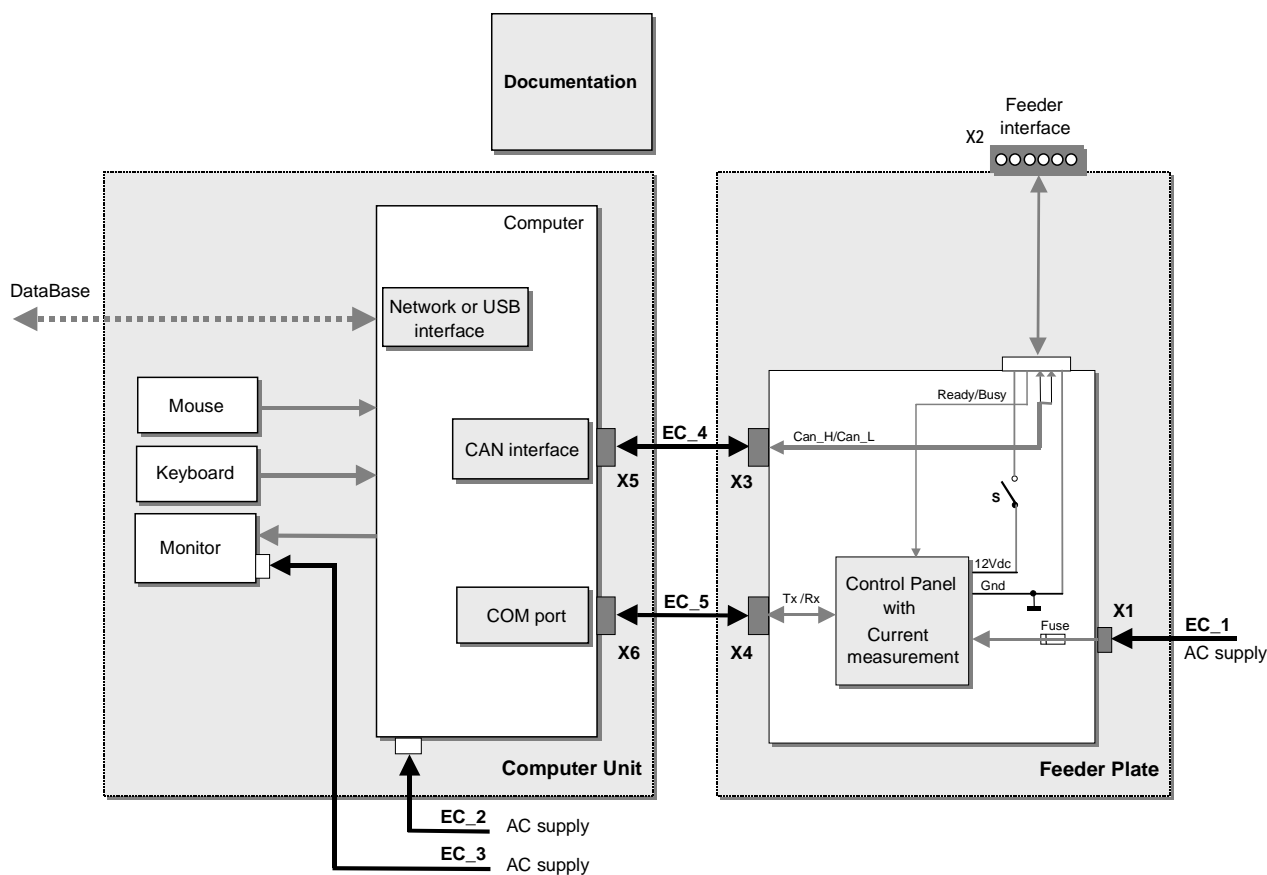


FIGURE 20

Name	Pin	Function
	7	Not applicable
	6	Not applicable
+12V	5	Feeder supply
Ready/Busy	4	Function depends on feeder mode
CAN high	3	CAN communication
CAN low	2	CAN communication
Gnd	1	Feeder supply (return)

FIGURE 21

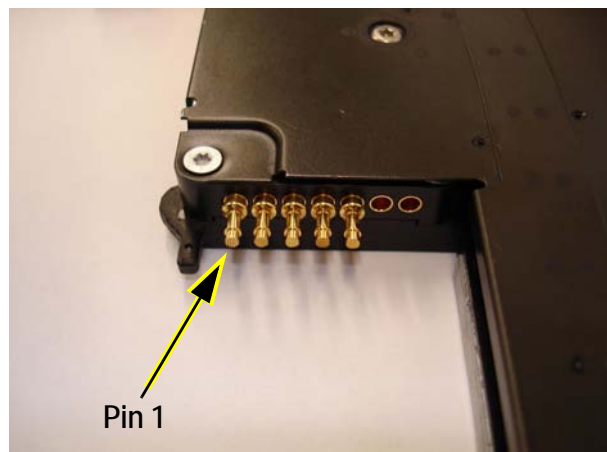


FIGURE 22

5.1 Possible problems on the feeder Analysis tool

■ Problem

Tool does not display feeder number and number of cycles.

■ Possible root causes

1. Feeder not inserted correctly on the Analysis plate.
2. Contact pin of feeder missing.
3. Main switch of Analysis tool is switched OFF.
4. DUT switch not switched to ON.
5. Contact block of Analysis plate is damaged or broken.

■ Solution

1. Insert feeder correctly into the Analysis plate. If this is not possible, check damage on position pins and contact pins.
2. Check the presence of the poison pins. At least pin nr. 1,2,3 and 5 should be present .
3. Switch ON the MAIN switch on the rear of the Analysis plate (*switch will light when switched ON*).
4. Switch ON the DUT switch on the front of the Analysis plate (*switch will light when switched ON*).
5. Replace contact block (*see chapter Spare parts*).

CHAPTER 6 Spare parts

Name	12nc	Remark
1. PCB analysis tool	9498-396-01301	
2. CAN Card	Obtain locally	
3. Connector Block	9498-396-01299	
4. Glass plate	9498-396-01300	
5. Needle 1.0 mm	9498-396-01347	
6. Spring	9498-396-01354	
7. Fuse	Obtain locally	250 V, 1 A slow

FIGURE 23

6.1 Replacement Instructions

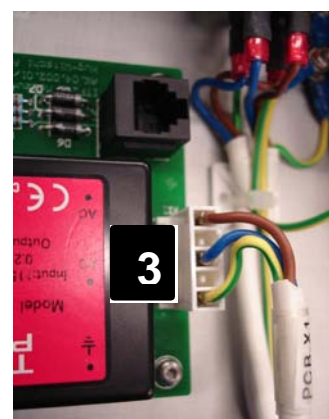
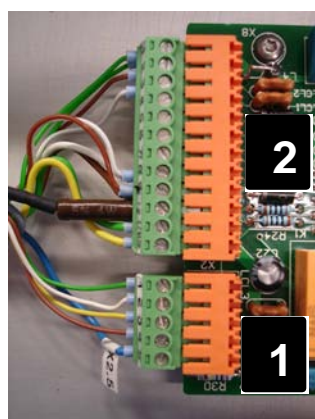
1. PCB Analysis tool, replacement

9498-396-01301

- Switch off the Analysis Tool.
- Remove the Power Cord, CAN cable and RS232 cable.
- Lay the Analysis tool upside down.
- Remove the bottom plate by loosen the screws.



- Disconnect the 3 connectors.
- Loosen the 4 screws and remove the old PCB.
- Take the new PCB and assemble in reverse order.



2. CAN Card

Obtain locally

- **Order information:**

- * Supplier: IXXAT

- * Supplier address: www.ixxat.com

- **Typenr.** 1.01.0044.11110

- **Specifications:** iPC-I 320/PCI, 2 x SJA1000 CAN controller, 2 x CAN interface.



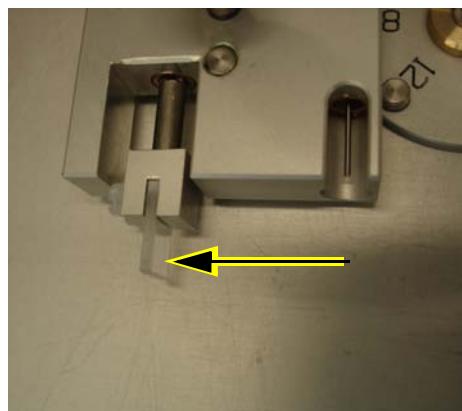
3. Connector Block

9498-396-01299



4. Glass plate

9498-396-01300



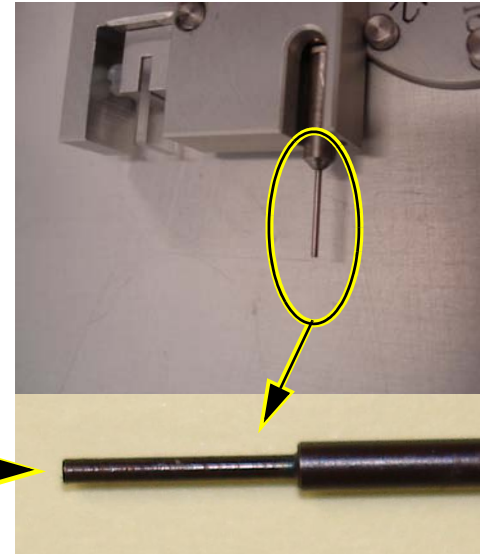
5. Needle 1.0 mm, replacement

9498-396-01347

- Remove needle holder by loosen screw 1.
- The old needle is glued with loctite. Heat the needle holder with a hairdryer on the location where the needle is inserted in the holder.

Use *Loctite 638* to fixate new needle in holder.

Needle

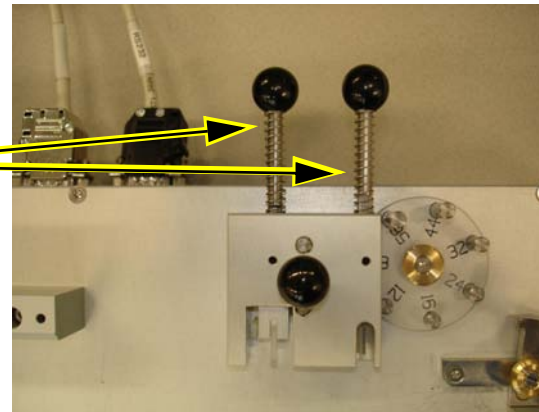


6. Spring, replacement

9498-396-01354

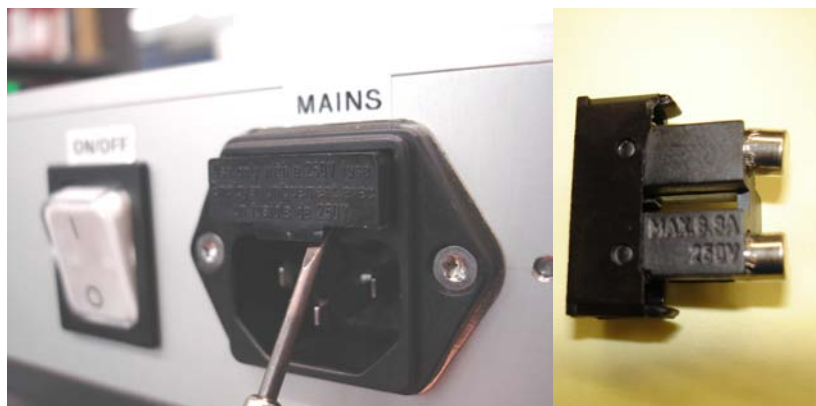
- Loosen small screw of glass plate holder or needle holder.
- Take the holder out of the Glass needle block assembly.
- Remove the old spring.
- Place the new spring on the holder.
- Replace the Glass needle block assembly.

Spring



7. Fuse, replacement

250 V, 1 A slow



CHAPTER 7 Registration + warranty DELL PC

7.1 Registration

When a DELL PC is physically submitted from one country to another, a form should be completed and submitted. This form can be found on the following internet address;

http://www.dell.com/content/topics/reftopic.aspx/pub/ccare/transfer_intl?c=us&cs=19&l=en&s=dhs

First the Original Customer Information needs to be entered.

At least the following information is required;

Email Address: *@assembleon.com*

Original Owner: *Assembleon*

Service Tag: *check PC (see fig.....)*

Country of Original Purchase: *Netherlands*

Customer Care - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Search the Web Search Address http://www.dell.com/content/topics/reftopic.aspx/pub/ccare/transfer_intl?c=us&cs=19&l=en&s=dhs

* Indicates a required field.

Original Customer Information

* Email Address:

* Original Owner:

* Service Tag: System Type:

* Country of Original Purchase:

Please do not mix service tags that originate in multiple countries. Requests originating from multiple 'Country of Original Purchase' not allowed and will be returned to you for re-submission.

Service Level:

Order or Invoice Number:

[Lookup #](#)

Transfer To Location Information

* Email Address:

* First Name:

* Last Name:

Done Internet

FIGURE 24

7.2 Warranty

The PC of the Analysis tool has a warranty period of 3 years. This warranty period starts at the moment Assembleon purchased the PC from DELL..

In case support is needed, please visit the DELL website.

<http://www1.euro.dell.com/content/default.aspx?c=nl&l=nl&s=gen&~ck=cr>

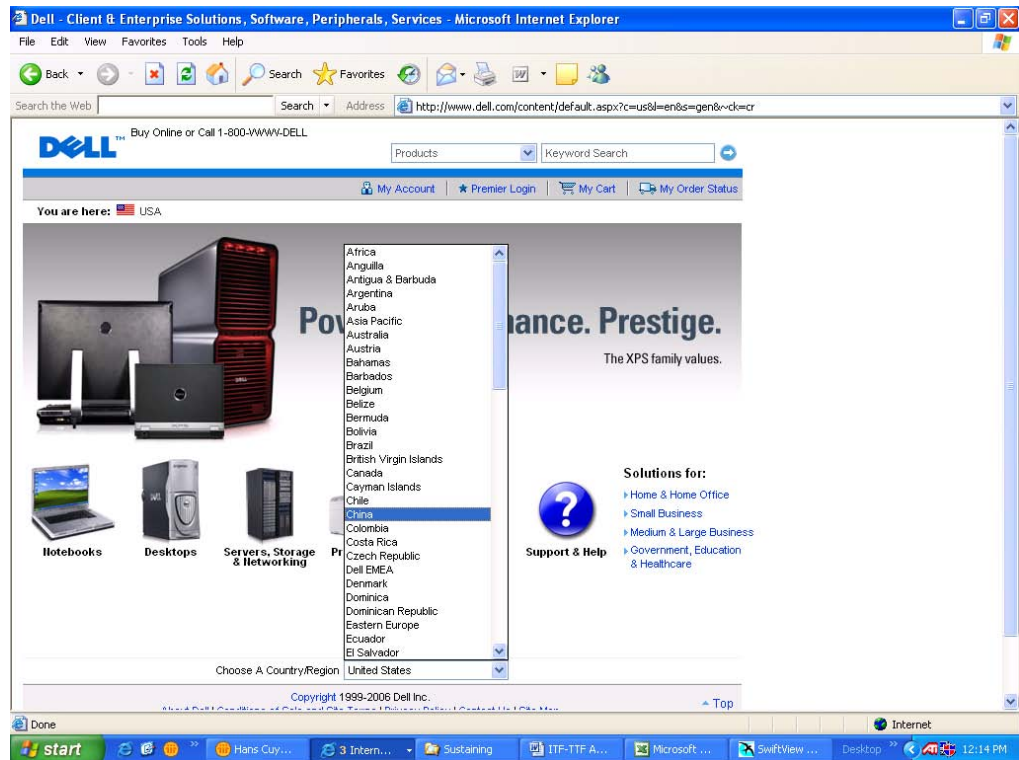


FIGURE 25

On this web page you can select your country to get the page in your own language.

On the internet you can check when the End date of a warranty period. To enter this page you need the Service Tag of your PC. This Service Tag can be found on a sticker on the PC.



FIGURE 26

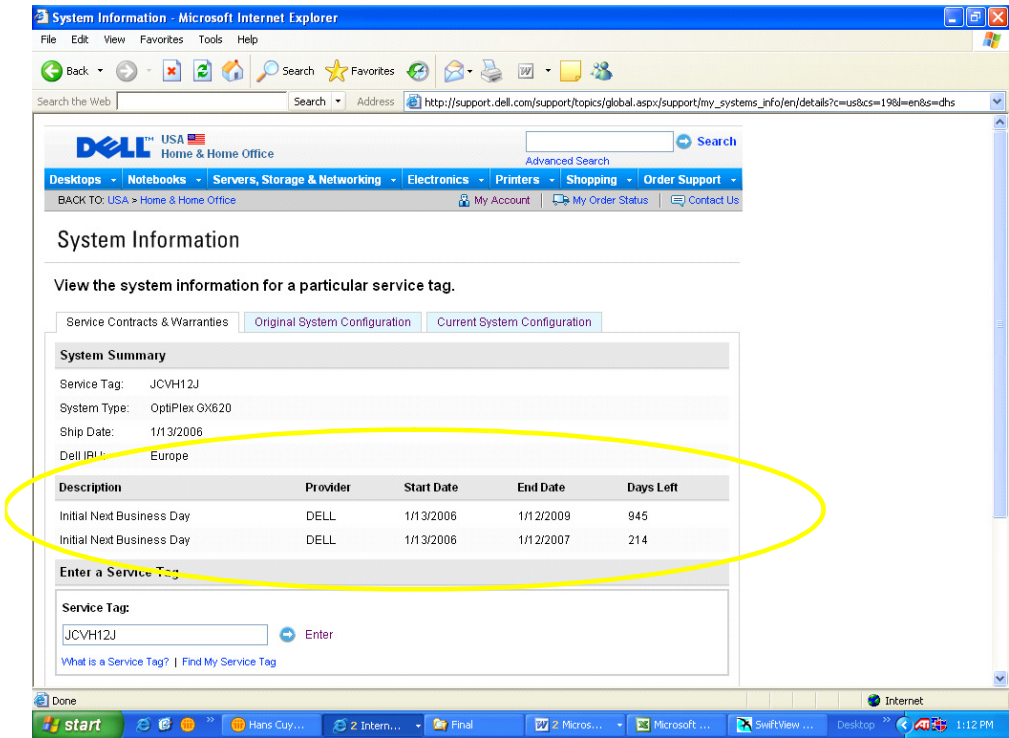


FIGURE 27

CHAPTER 8 APPENDIX A: Clamping of sprocket wheel lower lane

8.1 Function of Sprocket Wheel Clamp

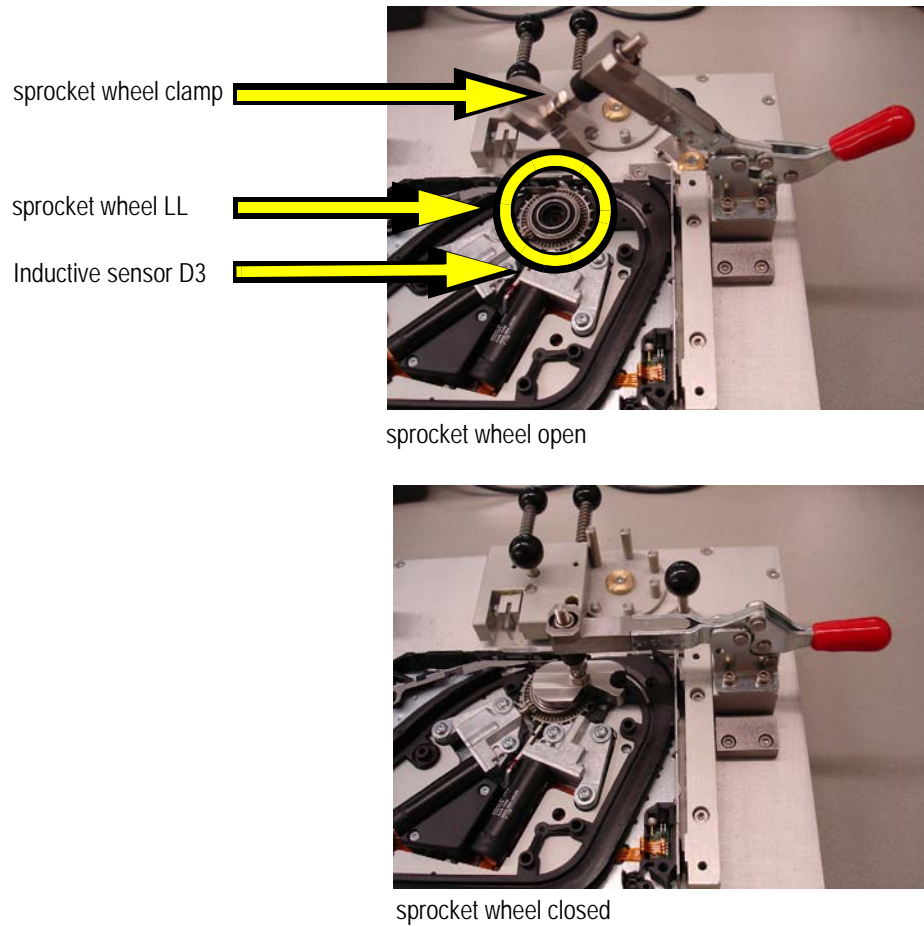


FIGURE 28

The sprocket wheel clamp on the Analysis tool has the following 2 functions:

1. Fixing the TTF sprocket wheel Lower Lane for adjusting the Inductive sensor D3. When no sprocket wheel clamp is used the sprocket wheel can get easily tilted on its interface. When the sprocket wheel is tilted the sensor can not be adjusted correctly.

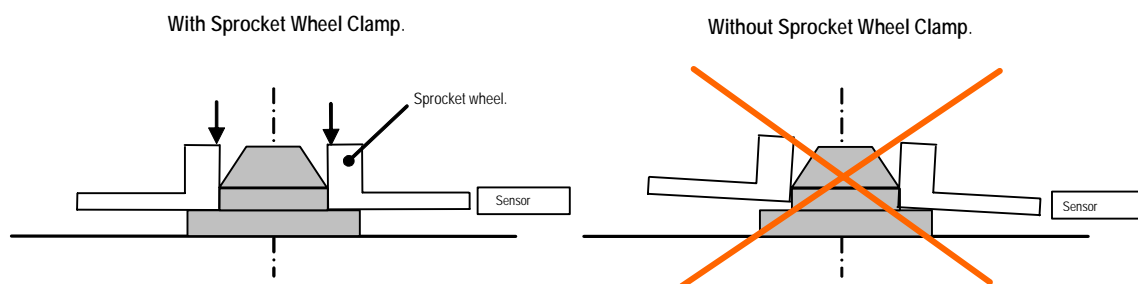


FIGURE 29

2. Fixing the TTF sprocket wheel Lower lane for testing the Sprocket motor without the need to mount the entire Top plate with all 20 screws. The sprocket wheel can rotate freely without friction because the sprocket wheel clamp only pushes on the inner bearing ring. (The difference in height between the inner and outer bearing ring is 0,4 mm, (0,2 mm per side))

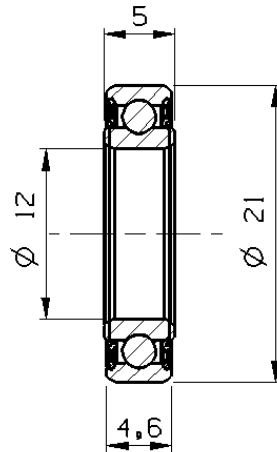


FIGURE 30

CHAPTER 9 APPENDIX B: Technical Specifications Analysis Tool

#	Specification Item	Description
1	Feeder compatibility	<p>PA2657/00 TTF R1.0 PA2654/xx ITF2 8mm R1, R2, R3 and R4 9466 920 09911 ITF2 16mm Deep Pocket Feeder 9466 918 14881 ITF2 16mm 22" Reelholder 9466 920 10731 ITF2 24mm CV 9466 920 09921 ITF2 24mm Deep Pocket Feeder 9466 918 07381 ITF2 24mm 22" Reelholder 9466 920 10741 ITF2 32mm CV 9466 920 09701 ITF2 24mm Deep Pocket Feeder 9466 918 07391 ITF2 24mm 22" Reelholder 9466 920 10751 ITF2 44mm CV 9466 920 09411 ITF2 24mm Deep Pocket Feeder 9466 918 07591 ITF2 24mm 22" Reelholder 9466 920 10761 ITF2 56mm CV 9466 920 09711 ITF2 24mm Deep Pocket Feeder 9466 918 07601 ITF2 24mm 22" Reelholder 9466 920 10401 ITF2 12SV</p> <p>Note: For some special feeder, the reelholder must be de-attached first before inserting it onto the tool (e.g. 22" reelholders). Note: Reels must be removed from the feeders before using the Analysis tool</p> <p>Difference between ITF and TTF is autotected (when feeder are communicating). Difference between various ITF feeders cannot be detected</p>
2	Tool Reference	Self-initialized prior to every feeder test
3	Language	<p>Initial Release: English Only</p> <p>Planned, no date yet available: Multi-language upgrades</p>
4	Database	<p>Microsoft Access format (can be read in Excel as well) Microsoft Access not included with tool.</p>
5	PC Requirements	<p>PC Delivered with Tool. Minimum Requirement Set: Pentium III, 256 MByte internal RAM Windows XP, Service Pack 2 (or higher) 5 GByte Hard Disc Space Required CD-ROM Video Card Resolution 1024x768, Keyboard, (Serial) Mouse, 1 Free COM Port, 1 Free Full Height PCI Slot (PCI-CAN) Network Card or 1 Free USB Port</p> <p>A backup CD of the installation (in case of disc crashes) is provided with the use of Symantec Ghost™</p>
6	Overview of Functions	See FIGURE 1



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Option Manual

ITF-TTF Calibration tool

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Based on	N.A.
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ITF-TTF Calibration tool

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CHAPTER 1 Safety

1.1 General

For the correct and safe use of the ITF-TTF calibration tool, service personnel should follow generally accepted safety procedures. In addition, they must comply with the safety precautions as specified in this manual.

Where necessary, special warning and caution statements are used throughout this manual. These statements will be explained in this chapter.

Moreover, all warning and caution statements present on any sticker on the ITF-TTF calibration tool is explained in this chapter.

1.2 Personnel qualification

Operation, adjustment, maintenance and repair of the ITF-TTF calibration tool may only be carried out by trained and qualified personnel who are aware of the hazards involved.

1.3 Caution and warning statements

1.3.1 Safety standards

The calibration tool will meet the following CE-directives:

- IEC 60204 Low voltage directive
- EMC directive EN50081-2 and EN50082-2

This will be achieved by using CE certified modules (e.g. power supply, PC, camera etc.)

1.3.2 Electrical safety

when working on the feeder calibration tool electrical system, always first switch off the Main Power and remove the power cable at the back of the tool.

The wiring colours are in accordance with the following relevant standard:

- IEC 60204-1

CHAPTER 2 ITF-TTF Calibration tool

2.1 ITF-TTF Calibration tool, set-up

The set-up for the ITF-TTF calibration tool is shown in [FIGURE 1](#). The parts of the ITF-TTF calibration tool are listed in [FIGURE 2](#). Also a short description is given of all parts.

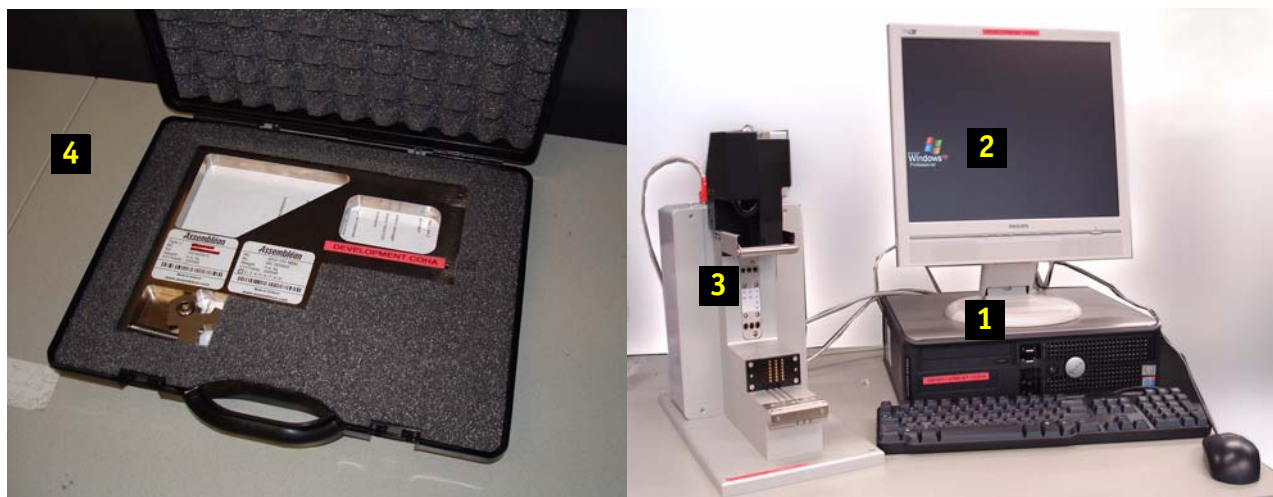


FIGURE 1 ITF-TTF calibration tool, set-up

Item no	Description	Remarks
1	PC system	Included: mouse, keyboard and software, I/O cards, CAN card, FireWire card
2	Monitor	
3	Calibration stand	With camera's on top
4	Reference feeder	In box
5	Image of PC sw	
6	Norton Ghost sw	To recover PC
-	Box	Included: calibration report, power cable.

FIGURE 2 ITF-TTF calibration tool, parts

Contact your RSC immediately if parts are missing or damaged.

REMARK: The calibration strips are not part of this calibration tool and need to be ordered separately see [FIGURE 10](#) for PA nr's).

2.2 ITF-TTF Calibration tool, parts description

2.2.1 Controller box

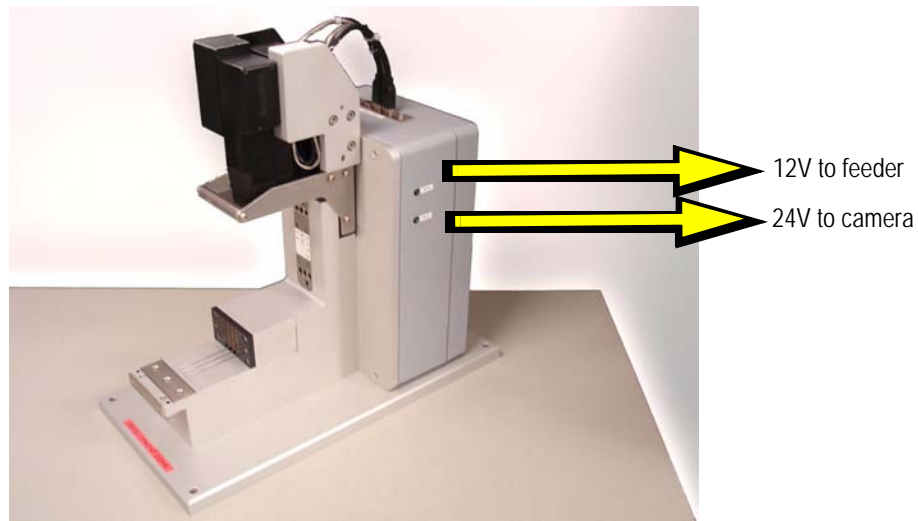


FIGURE 3

The controller box contains the power supplies and the repeaters for the 2 cameras. The power for computer and monitor can be taken from the adaptors at the rear of the control box. An extra power filter is placed inside the control box.

The LED's on the controller box are an indication for the power supply. The top LED is an indication for the 12V supply used for the feeder. The lower LED is an indication for the 24V supply used for the camera's.

The maximum input power of the control box must not exceed 2A (fuse in the power socket).

2.2.2 Mechanical interface

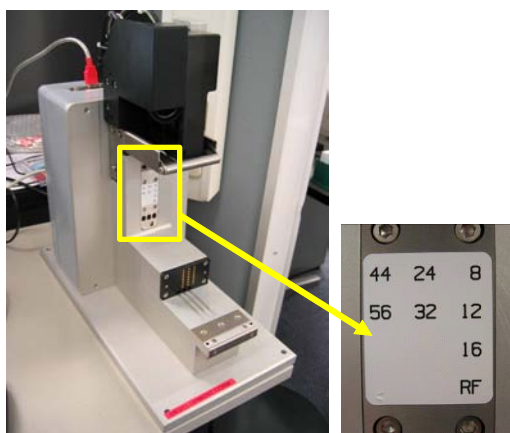


FIGURE 4 Mechanical interface

The interface has three feeder slots. The most right slot must be used for all 8mm Feeders and the reference feeder. Overview of all feeders see [FIGURE 5](#)

Slot 3	Slot 2	Slot 1
44	24	8 (ITF-2 + TTF)
56	32	12
		16
		Reference feeder

FIGURE 5 Feeders - slots relation

The tool is provided with two CCD camera's for measuring the co-ordinates/ deviations on all feeder slots. The camera has a fixed position, without any adjustments.

Typical camera performance:

Resolution: 1024 x 768 [pixels]

FOV: 9.0 x 6.8 [mm]

Depth of Field: ±1.25 [mm] from nominal focus plane

Pixel size (square): . . typical 8.8 [µm]

In case of damage the complete interface, including the camera, has to be returned for repair.

In case of a malfunction on one of the cameras, the camera can be replaced with a new one see [CHAPTER 5 "Spare parts"](#).

2.2.3 PC system

All necessary software is pre-installed by Assembléon.



NOTE: It is not allowed to copy the software. It is not allowed to install other applications on this PC!

2.2.4 Reference feeder

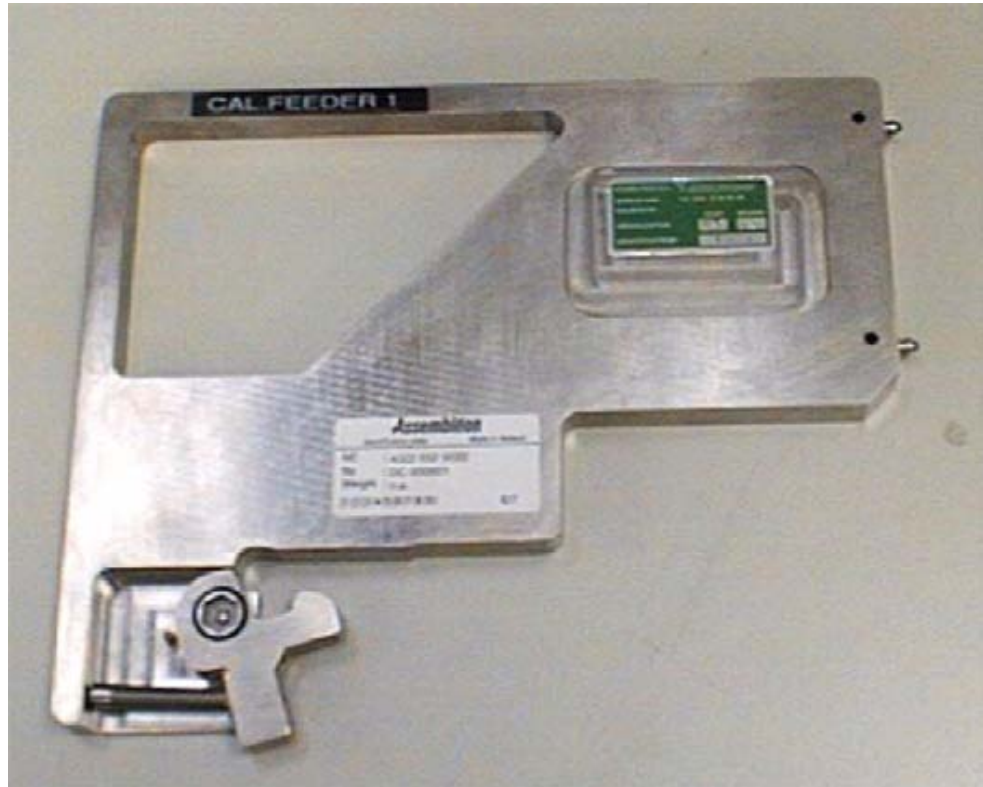


FIGURE 6 Reference feeder (with calibration report) included

For calibration of the calibration tool a reference feeder is needed.

The reference feeder represents the ideal pick-positions. The reference feeder is provided with a calibration label, and a report delivered with the feeder as an approval. This label shows the month and year of expire.

- The measured values, (A, B, C, D, E and F) are in the report (see [FIGURE 14](#)).
- The reference feeder must be calibrated every year, to be done by a certified measurement institute.

After calibration, the new measured values (A,B,C, D, E and F, according to the measurement report) must be filled in the "Reference Feeder.ini" file. This file can be found in directory:

- C:\Program Files\Feeder Calibration Tool\Reference Feeder.ini

In this file the tool number and the measured position of the holes in the reference feeder are saved.

2.2.5 Feeder calibration strips

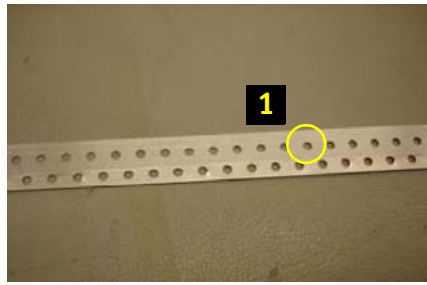


FIGURE 7

Calibration strip ITF-2 8 mm

The feeder calibration strips are consumables with a maximum life-time of 500 feeder calibrations (depends strongly on handling and the use of it!)

Strips can be ordered via the order desk.

Each feeder type has its own calibration strip. Difference between the calibration strips for the ITF feeders is the width of the strip:

Difference between calibration strip for ITF-2 8mm and TTF is the size of the fiducial holes (1) and the number of fiducial holes. TTF has small fiducial holes, ITF-2 has bigger fiducial holes.

- Each calibration strip is marked with a run-in marker (arrow). When inserting the calibration strip into the feeder, the arrow needs to point to the calibration tool.
- Each calibration strip is marked with feeder type and feeder width (ITF only) (e.g. ITF 12, ITF 16 etc.).



NOTE: Store calibration strips in a closed box for better protection.

The calibration strip must be checked for damages by visual inspection at least every day or after a feeder-jam.

If the strips are damaged partly, this part can be cut away as long as the strip has 5 cm free before the calibration holes start. The strip must be cut straight.

2.2.6 Automatic identification calibration strip

ITF strips have 4 identification positions just after the first synchronisation hole (first hole) for automatic feeder width recognition.

ITF2 width	Pos 1	Pos 2	Pos 3	Pos 4	Pos 5
8 mm	•	•	•	•	•
12 mm	•		•	•	•
16 mm	•	•		•	•
24 mm	•			•	•
32 mm	•	•	•		•
44 mm	•		•		•
56 mm	•	•			•
8 mm 0201 <i>reserved</i>	•			•	•
12 mm SV	•		•	•	

• = Hole blank= No hole

FIGURE 8

Pos 1 is always a hole for synchronisation (first hole from run in marker).

Each ITF width identification has its own rejection criteria.

For feeder rejection criteria, see [FIGURE 9](#).

After the ITF width identification is read, the rejection criteria shall be automatically adjusted.

2.2.6.1 Rejection Criteria settings

Each feeder type and feeder width has its own rejection criteria. These criteria and the location of the file with the values are described below.

2.2.6.2 Rejection criteria

Rejection criteria for TTF R1.0 can be found in:

- Directory : C:\Program Files \Feeder Calibration Tool\
- Filename: TTF R1.0.ini

Rejection criteria for ITF can be found in:

- Directory : C:\Program Files \Feeder Calibration Tool\
- Filename: ITF.ini

The rejection values used in the .ini files are shown in the table below.

FeederType	X-calibration reject limit [μm]	Y-calibration reject limit [μm]
TTF	330	130
ITF-8mm	200	100
ITF-12mm	200	100
ITF-16mm	200	100
ITF-24mm	200	100
ITF-32mm	200	100
ITF-44mm	200	200
ITF-56mm	200	200

FIGURE 9

2.2.6.3 Bending calibration strip

1. Bending the feeder calibration strip for ITF-2 and TTF feeder.

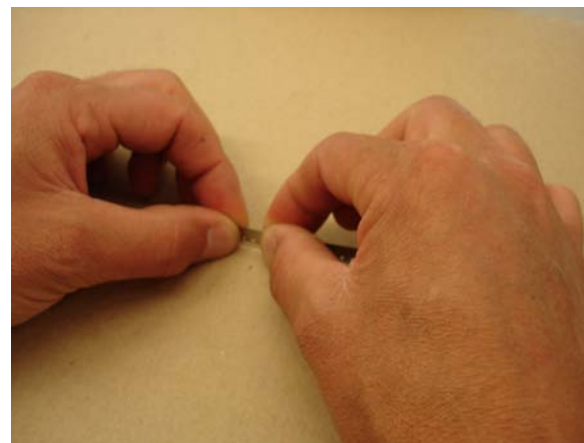
- For a better guiding of the feeder calibration strip, it is important that the first 10cm of this strip is bended.



Calibration strip not bended

REMARK: This instruction is for all feeder types mentioned in [FIGURE 10](#). Except ITF 44 mm and 56 mm. For this types a new calibration strip will be available. This new calibration strip does not need to be bended.

- This can be achieved by holding the strip between your fingers according the figure and pull with your right hand on the first 10 cm of the strip.



Pull on the first 10 cm of the calibration strip

- Now the calibration strip is ready to use.



Calibration strip bended

PA #	Calibration strip
PA 2840/00	TTF
PA 2840/01	ITF 8 mm
PA 2840/02	ITF 12 mm
PA 2840/03	ITF 12 SV
PA 2840/04	ITF 16 mm
PA 2840/05	ITF 24 mm
PA 2840/06	ITF 32 mm
PA 2840/07	ITF 44 mm
PA 2840/08	ITF 56 mm

FIGURE 10

2.3 ITF-TTF calibration tool, installation

All necessary software to run the calibration is pre-installed.

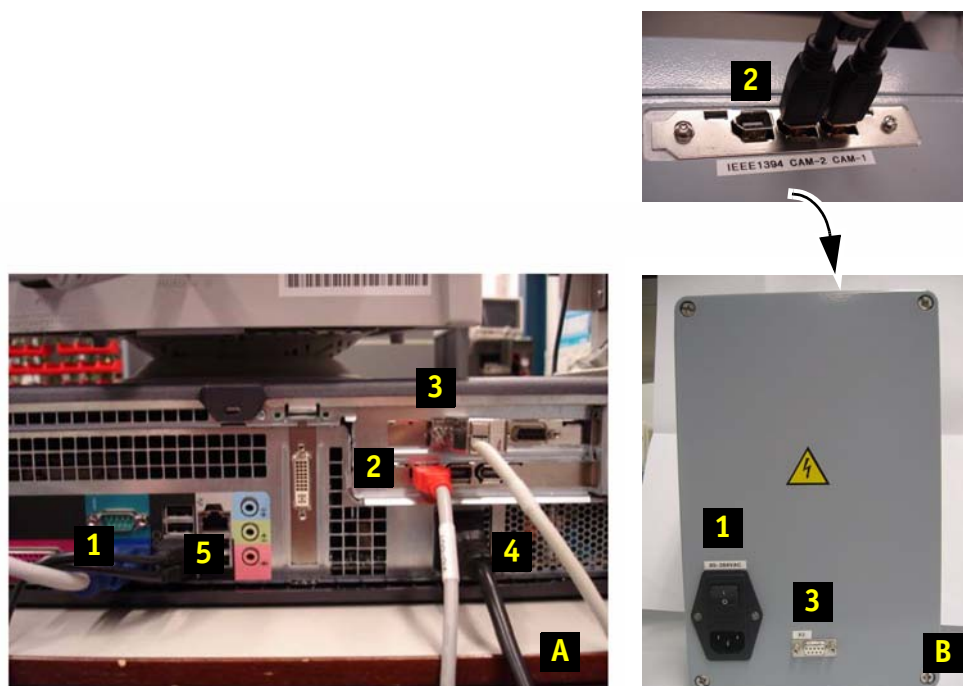


FIGURE 11

ITF-TTF calibration tool, installation

Connection	
A1	monitor
A2 - B2	Video connection Fire Wire
A3 - B3	CAN communication
A4	Power supply PC system
A5	Mouse + keyboard
B1	AC power input, requirements see 2.3.1 Input power requirements

FIGURE 12

ITF-TTF calibration tool, connections

2.3.1 Input power requirements

The control unit is designed to be used by an AC input voltage range of 85 Vac to 264 Vac and with a frequency range of 47 - 63 Hz.

The PC and monitor must be adjusted to the local AC input voltage supply.

The power consumption is 150 Watt at 220 Vac (excl. PC and monitor).

Input power protection is 2A (fuse in power socket).

2.4 Calibration

2.4.1 Environmental requirements

Functioning of the tool is guaranteed in the range of +20°C to +30°C and with a relative humidity between 50 and 95% (no condensation).

2.4.2 Feeder range covered by the ITF-TTF calibration tool

The feeder range in the table below are supported by the tool;

Ordering code	Description
PA2657/xx	TTF 8 mm
PA2654/0x	ITF2 8 mm
PA2654/1x	ITF2 12 mm
PA2654/2x	ITF2 16 mm
PA2654/3x	ITF2 24 mm
PA2654/4x	ITF2 32 mm
PA2654/5x	ITF2 44 mm
PA2654/6x	ITF2 56 mm
PA2654/7x	ITF2 12mm SV (small version)

FIGURE 13

Feeder range covered by the ITF-TTF calibration tool

The calibration tool is able to measure tool and feeder deviations within at least the following range:

- +/- 0.5 [mm] for the Y-direction
- +/- 0.5 [mm] for the X-direction

2.4.3 Calibration data storage

The software application provides calibration information for statistical analysis of feeders, which consist of 2 files in plain ASCII-text.

For each feeder calibration (upper or lower lane), there is one row defined for the calibration information.

Within a row, the calibration information is separated by tabs (= column information).

The following calibration information per row is defined see also [CHAPTER 9 "APPENDIX B: Explanation of files"](#):

2.4.3.1 Tool calibration data

■ field number 1	Calibration Date	[MM/DD/YY]
■ field number 2	Calibration Time	[HH:MM:SS]
■ field number 3	Tool Number	[9 chars max]
■ field number 4	Reference Feeder Number	[9 chars max]
■ field number 5	X offset Hole 1	[μm]
■ field number 6	Y offset Hole 1	[μm]
■ field number 7	X offset Hole 2	[μm]
■ field number 8	Y offset Hole 2	[μm]
■ field number 9	X offset Hole 3	[μm]
■ field number 10	Y offset Hole 3	[μm]

■ The directory, in which the file is stored, will be automatically created.

- Directory: C:\Calibration Data\Tool\
- Filename: Tool Calibration.txt

2.4.3.2 Feeder calibration data TTF R1.0

■ field number 1	Feeder number	[7 digits max]
■ field number 2	Lane number	[1 = upper, 2 = lower]
■ field number 3	Feeder calibration date	[DD/MM/YY]
■ field number 4	Feeder calibration time	[HH:MM:SS]
■ field number 5	Tool calibration date	[DD/MM/YY]
■ field number 6	Tool calibration time	[HH:MM:SS]
■ field number 7	Tool number	[9 chars max]
■ field number 8	Reference feeder number	[9 chars max]
■ field number 9	Feeder Type	[TTF]
■ field number 10	SW-version	[major.minor]
■ field number 11	HW-version	[major.minor]
■ field number 12	Pitch	[4 mm]
■ field number 13	Cycle counter	[10 digits max]
■ field number 14 - 37	24 Y-correction values	[-999 .. +999] see Note
■ field number 38 - 61	24 X-deviations	[μm]
■ field number 62 - 85	24 Y-deviations	[μm]



NOTE: Values are in numbers of encoder edges

■ The directory, in which the file is stored, will be automatically created.

- Directory: C:\Calibration Data\TTF R1.0\
- Filename: Feeder Calibration.txt

2.4.3.3 Feeder calibration data ITF

■ field number 1	Feeder number	[7 digits max]
■ field number 2	Feeder calibration date	[DD/MM/YY]
■ field number 3	Feeder calibration time	[HH:MM:SS]
■ field number 4	Tool calibration date	[DD/MM/YY]
■ field number 5	Tool calibration time	[HH:MM:SS]
■ field number 6	Tool number	[9 chars max]
■ field number 7	Reference feeder number	[9 chars max]
■ field number 8	Feeder Type	[ITF2]
■ field number 9	Feeder width	[Unknown]
■ field number 10	SW-version	[major.minor]
■ field number 11	HW-version	[major.minor]
■ field number 12	Pitch	[4 mm]
■ field number 13	Cycle counter	[10 digits max]
■ field number 14 - 33	20 Y-correction values	[-999 .. +999] see Note
■ field number 34 - 83	50 Y-deviations	[µm]
■ field number 84 - 133	50 X-deviations	[µm]



NOTE: values are in numbers of encoder edges

- The directory, in which the file is stored, will be automatically created.
 - Directory: C:\Calibration Data\ITF2\
 - Filename: Feeder Calibration.txt

When the tool or feeder is (re)calibrated, the calibration information will be added (as a new row) to the file.

All specific adjustments are defined in 2 INI-files in plain ASCII-text.

2.4.3.4 Tool calibration settings

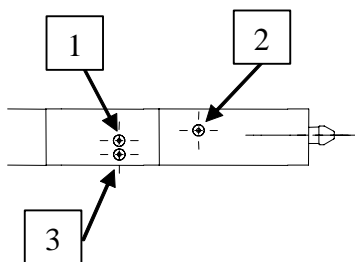
This file contains system data that never needs to be changed.

- The directory, in which this file is stored, is:
 - Directory: C:\Program Files \Calibration Tool\
 - Filename: FeederCalibrationtool.ini

2.4.3.5 Reference feeder settings

After measurement of the reference feeder, the file *Reference Feeder.ini* needs to be edited. The data in the window below (A to F) needs to be copied from the calibration report into the Reference Feeder.ini file.

Drawing Number		4022 532 8690.1 (sheet 110)		
Serial Number				
Dimension (see Figure 1)		Nominal Dimension	Measured Dimension	Measurement uncertainty
	HOLE number			
A	3	+ 5150 [μm][μm][μm]
B		- 50150 [μm][μm][μm]
C	2	- 1300 [μm][μm][μm]
D		- 29150 [μm][μm][μm]
E	1	+ 1450 [μm][μm][μm]
F		- 50200 [μm][μm][μm]



These **signed-values** (according to A, B, C, D, E and F) have to be edited by the user in the Reference Feeder.INI file

FIGURE 14



NOTE: Measured position according to the reference measure report.
After (re)calibration of the reference feeder, this sections must be edited.

- The directory, in which this file is stored, is:
 - Directory: C:\Program Files \Feeder Calibration Tool*
 - Filename: ReferenceFeeder.ini

2.5 Calibration procedure

Click on the “ITF-TTF calibration tool” icon and the application will be started.



FIGURE 15

Icon to start calibration

2.5.1 Calibration of tool

■ When?

At delivery, the tool is fully calibrated. However, it is recommended to calibrate the tool before the first time use.

Preventive calibration of the tool (with a reference feeder) must be done:

- After a crash or brutal accident with the feeder interface and/or camera unit.
- If the temperature increase or decrease more than 3°C after the last calibration.
- After changing one of the camera's.

■ How?

To calibrate the tool the following actions need to be taken;

- Double click the shortcut “ITF-TTF calibration tool” on the PC.
- Insert the reference feeder on the interface most right position.
- Press “Calibrate” (1).



FIGURE 16

Calibration of tool



NOTE: Be aware that the reference feeder is inserted correctly during calibration of the tool.

In the configuration menu the position of the 3 holes are displayed.

Configuration

Tool

Serial Number

DC000602

Calibration date

21/12/2005

Calibration time

10:24:31

Calibration interval

0

Software version

1.03

Reject Limits

Feeder Type

ITF2

X [µm]

350

Y [µm]

100

Reference Feeder

Serial Number

DC000602

Measurement report expires

0107

Hole Number

1

Nominal

Measured

Correction

X [µm]

1250

1257

-179

Y [µm]

-50200

-50212

284

OK

FIGURE 17

Configuration

CHAPTER 3 Trouble shooting, ITF-TTF calibration tool

3.1 Schematic diagram, ITF-TTF calibration tool

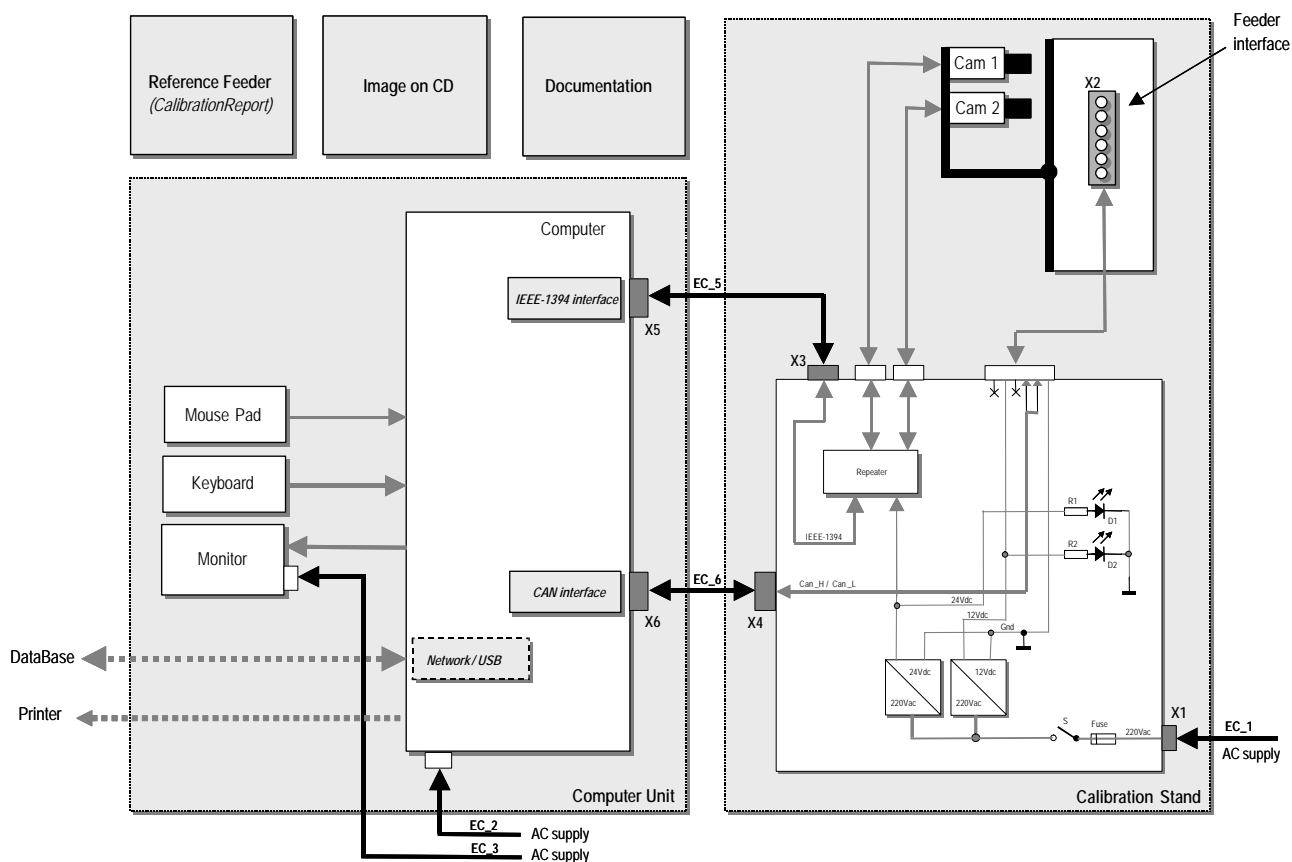


FIGURE 18 Schematic diagram, ITF-TTF calibration tool

Name	Pin	Function
	7	Not applicable
	6	Not applicable
+12V	5	Feeder supply
Ready/Busy	4	Function depends on feeder mode
CAN high	3	CAN communication
CAN low	2	CAN communication
Gnd	1	Feeder supply (return)

FIGURE 19 Feeder interface

REMARK: Pin 1 is defined as the most lower pin (see [FIGURE 20](#)).

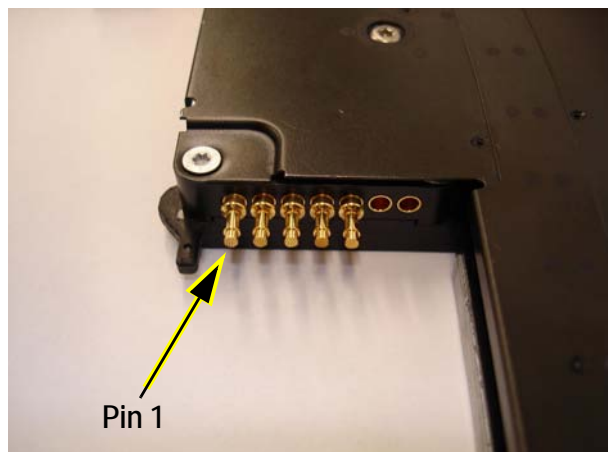


FIGURE 20

3.2 Possible problems on the feeder Calibration tool

■ Problem

Tool does not display serial number.

■ Possible root causes

1. Feeder not inserted correctly on the Calibration tool.
2. Feeder not inserted on correct position (see [FIGURE 5](#)).
3. Contact pin of feeder missing.
4. Main switch of Calibration tool is switched OFF.

■ Solution

1. Insert feeder correctly into the feeder Calibration tool. If this is not possible, check damage on the contact pins of the feeder.
2. Check [FIGURE 5](#) to insert feeder on correct position of the calibration tool.
3. Check whether no contact pin of the feeder is missing (see [FIGURE 20](#)).
4. Switch on the main switch on the rear side the calibration tool.
When the main switch is switched "ON", the 2 LED's on the right hand side of the calibration tool (see [FIGURE 3](#)) will light up.

3.3 Electrical diagram, ITF-TTF calibration tool

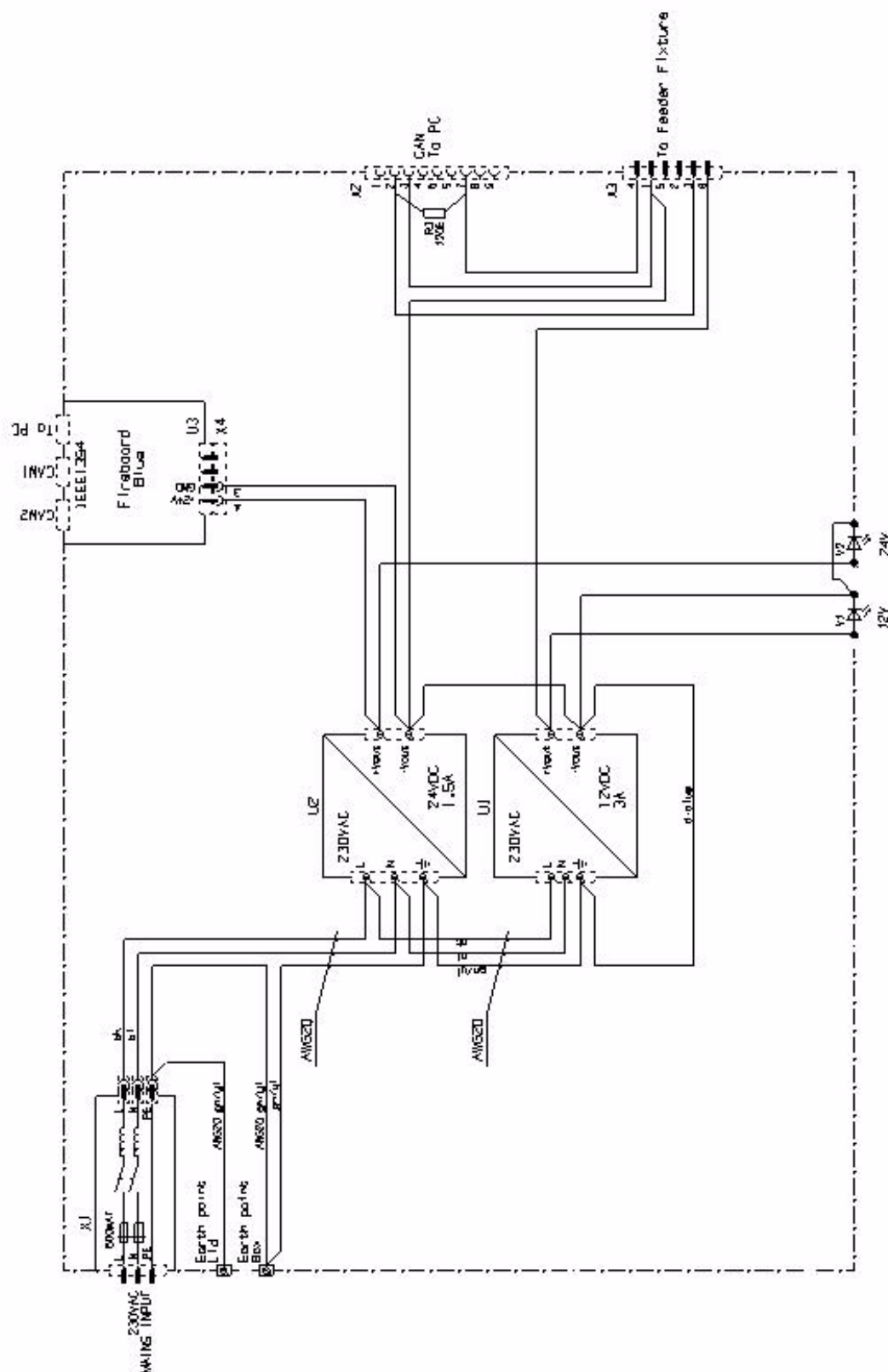


FIGURE 21 Electrical diagram, ITF-TTF calibration tool

CHAPTER 4 Installation software

4.1 Recover after software crash

In case of a software crash, there is a possibility to recover the complete system. This can be done with the backup of the image that is delivered with the Calibration Tool.

For all deliveries with PA2849/70, DC number 703, and newer, the backup image of the software can be found on the inside of the computer cover.



FIGURE 22

Software image on inside of computer cover

The recover procedure can be found in the *Norton Ghost User Guide* (page 68, *Recovering your computer*) that is delivered with the Calibration Tool.

4.2 Complete software installation

After a hardware change of the PC (e.g. new harddisk) it is NOT possible to recover the software with the image as described above. In this case a complete software installation needs to be performed.

Contact your local Assembléon Customer Support organization for more details.

CHAPTER 5 Spare parts

5.1 Repair

The repair tool is a local repairable unit only. Parts needed for local repair can be ordered and are identified in the spare parts list. Parts, not mentioned in this list, can be obtained on special request. The lifetime of the repair tool is 150.000 feeder exchanges or 5 years whatever comes first.

5.2 Spare parts

Before delivery, all spare parts that require adjustments are adjusted and measured, therefore ordered material requires no additional adjustment.

5.3 Spare parts lists

The fields in the spare parts list have the following meaning:

Item No	Position Identification.
Part of Item No	Module the part belongs to.
Ordering Code	the order code at Assembléon.
t.b.d. = To be defined. Code number not yet available.	
Description	Description of the article.
Qty/Mod	The quantity of the part in one module.
PI	If 'Y', the part must be stocked regionally.
Serv. Instr	If 'Y', a service instruction, maintenance or replacement instruction is available.
Remarks	1.Comment or specific information. 2.'Per Order Article', article with long lead-time. 3.Standard Packing Unit: Minimum packing quantity.

5.3.1 Spare parts, calibration tool

Item No.	Part of Item No.	Ordering Code	Description	Qty/ Mod	Priority indicator	Repair options	Replacement Instruction	Remarks
1		9498-396-01142	BA Camera					
2		9498-398-01290	Reference feeder calibration					

FIGURE 23

1

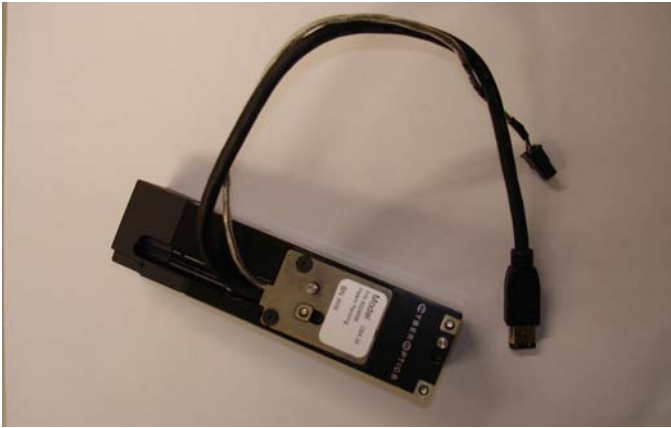


FIGURE 24

BA camera


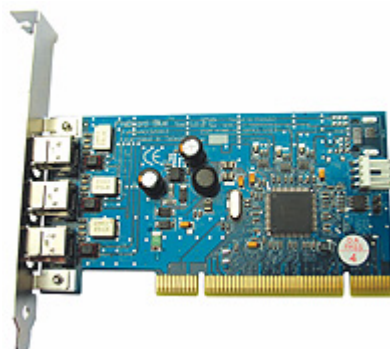
2



FIGURE 25

Reference feeder calibration

5.3.1.1 Spare parts obtain locally

<p>CAN Card</p> <p>Order information:</p> <ul style="list-style-type: none"> - Supplier: IXXAT - Supplier address: www.ixxat.com - Typer nr.: 1.01.0044.11110 - Specifications: iPC-I 320/PCI, 2 x SJA1000 CAN controller, 2 x CAN interface. 	
<p>Fire Wire Card</p> <p>Order information:</p> <ul style="list-style-type: none"> - Supplier: Unibrain - Supplier address: www.unibrain.com - Specification: IEEE-1394 <p>Unibrain's FireBoardBlue™ Host Adapter brings high-performance IEEE-1394 technology to PCI systems. Based on the Texas Instruments TSB43AB23 device, an integrated 1394a-2000 OHCI PHY/link-layer controller, provides high performance serial connectivity. The TSB43AB23 is capable of transferring data between the 33MHz PCI bus and the 1394 bus at 100Mbits/sec, 200Mbits/sec, and 400Mbits/sec. FireBoardBlue™ provides three 1394 ports that have separate cable bias (TPBIAS) and PCI bus master bursting, capable of transferring a cacheline of data at 132Mbytes/sec after connection to the memory controller. Because PCI latency can be large, deep FIFOs are provided to buffer the 1394 data.</p>	

CHAPTER 6 Forms

6.1 Calibration form TTF

Calibration Form		Feeder Nr.	1006719																																																																														
Tool Calibration Parameters																																																																																	
nr. calibr. tool → date + time of last time tool calibration →	Tool number	DC000602																																																																															
	Ref feeder number	DC000602																																																																															
	Date	08/09/2005																																																																															
	Time	11:07:21																																																																															
Upper Lane Values																																																																																	
date + time calibration UL →	Cycle count	158752																																																																															
	Date	08/09/05																																																																															
	Time	11:08:19																																																																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Tooth</th> <th>Y Correction</th> <th>Y Deviation</th> </tr> <tr> <th>Position</th> <th>[dec]</th> <th>[um]</th> </tr> </thead> <tbody> <tr><td>1</td><td>-23</td><td>-46</td></tr> <tr><td>2</td><td>-23</td><td>-22</td></tr> <tr><td>3</td><td>-23</td><td>4</td></tr> <tr><td>4</td><td>-23</td><td>9</td></tr> <tr><td>5</td><td>-23</td><td>-11</td></tr> <tr><td>6</td><td>-23</td><td>-10</td></tr> <tr><td>7</td><td>-23</td><td>-20</td></tr> <tr><td>8</td><td>-23</td><td>-15</td></tr> <tr><td>9</td><td>-23</td><td>17</td></tr> <tr><td>10</td><td>-23</td><td>-7</td></tr> <tr><td>11</td><td>-23</td><td>-11</td></tr> <tr><td>12</td><td>-23</td><td>5</td></tr> <tr><td>13</td><td>-23</td><td>-16</td></tr> <tr><td>14</td><td>-23</td><td>4</td></tr> <tr><td>15</td><td>-23</td><td>20</td></tr> <tr><td>16</td><td>-23</td><td>2</td></tr> <tr><td>17</td><td>-23</td><td>-17</td></tr> <tr><td>18</td><td>-23</td><td>-13</td></tr> <tr><td>19</td><td>-23</td><td>-30</td></tr> <tr><td>20</td><td>-23</td><td>2</td></tr> <tr><td>21</td><td>-23</td><td>14</td></tr> <tr><td>22</td><td>-23</td><td>-9</td></tr> <tr><td>23</td><td>-23</td><td>-49</td></tr> <tr><td>24</td><td>-23</td><td>-43</td></tr> </tbody> </table>				Tooth	Y Correction	Y Deviation	Position	[dec]	[um]	1	-23	-46	2	-23	-22	3	-23	4	4	-23	9	5	-23	-11	6	-23	-10	7	-23	-20	8	-23	-15	9	-23	17	10	-23	-7	11	-23	-11	12	-23	5	13	-23	-16	14	-23	4	15	-23	20	16	-23	2	17	-23	-17	18	-23	-13	19	-23	-30	20	-23	2	21	-23	14	22	-23	-9	23	-23	-49	24	-23	-43
Tooth	Y Correction	Y Deviation																																																																															
Position	[dec]	[um]																																																																															
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<div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> ↓ tooth number (relative) there is no fixed number for each tooth </div> <div style="text-align: center;"> ↓ nr. of encoder counts </div> <div style="text-align: center;"> ↓ offset measured during verification </div> </div>																																																																																	
Feeder Parameters																																																																																	
		Type	TTF → feeder type																																																																														
		SW Version	3.5 → sw version																																																																														
		HW Version	1.0 → hw version																																																																														
		Pitch [mm]	4 → pitch (always 4)																																																																														
Lower Lane Values																																																																																	
		Cycle count	62847 → nr. of indexes LL																																																																														
		Date	08/09/05																																																																														
		Time	11:09:30 → date + time calibration LL																																																																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Tooth</th> <th>Y Correction</th> <th>Y Deviation</th> </tr> <tr> <th>Position</th> <th>[dec]</th> <th>[um]</th> </tr> </thead> <tbody> <tr><td>1</td><td>21</td><td>-21</td></tr> <tr><td>2</td><td>21</td><td>-7</td></tr> <tr><td>3</td><td>21</td><td>-20</td></tr> <tr><td>4</td><td>21</td><td>9</td></tr> <tr><td>5</td><td>21</td><td>-53</td></tr> <tr><td>6</td><td>21</td><td>-20</td></tr> <tr><td>7</td><td>21</td><td>-63</td></tr> <tr><td>8</td><td>21</td><td>-65</td></tr> <tr><td>9</td><td>21</td><td>-44</td></tr> <tr><td>10</td><td>21</td><td>-11</td></tr> <tr><td>11</td><td>21</td><td>-25</td></tr> <tr><td>12</td><td>21</td><td>-6</td></tr> <tr><td>13</td><td>21</td><td>-49</td></tr> <tr><td>14</td><td>21</td><td>-34</td></tr> <tr><td>15</td><td>21</td><td>44</td></tr> <tr><td>16</td><td>21</td><td>-7</td></tr> <tr><td>17</td><td>21</td><td>76</td></tr> <tr><td>18</td><td>21</td><td>13</td></tr> <tr><td>19</td><td>21</td><td>52</td></tr> <tr><td>20</td><td>21</td><td>2</td></tr> <tr><td>21</td><td>21</td><td>83</td></tr> <tr><td>22</td><td>21</td><td>-0</td></tr> <tr><td>23</td><td>21</td><td>-49</td></tr> <tr><td>24</td><td>21</td><td>7</td></tr> </tbody> </table>				Tooth	Y Correction	Y Deviation	Position	[dec]	[um]	1	21	-21	2	21	-7	3	21	-20	4	21	9	5	21	-53	6	21	-20	7	21	-63	8	21	-65	9	21	-44	10	21	-11	11	21	-25	12	21	-6	13	21	-49	14	21	-34	15	21	44	16	21	-7	17	21	76	18	21	13	19	21	52	20	21	2	21	21	83	22	21	-0	23	21	-49	24	21	7
Tooth	Y Correction	Y Deviation																																																																															
Position	[dec]	[um]																																																																															
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FIGURE 26

6.1.1 Calibration form ITF-2

Calibration Form	Feeder Nr.	304891
-------------------------	-------------------	---------------

Feeder Parameters

Type	ITF2
SW Version	1.7
HW Version	2.1
Pitch [mm]	4
Cycle count	5610
Date	13/09/05
Time	13:26:09

Feeder Correction Values

Sector	Value	Sector	Value
1	66	6	67
2	66	7	65
3	66	8	64
4	67	9	64
5	68	10	63

Feeder Measured Deviations

Tooth number	Y [um]
1	-12
2	-12
3	-16
4	-13
5	-1
6	2
7	5
8	-7
9	20
10	7
11	10
12	-5
13	20
14	3
15	-15
16	11
17	3
18	7
19	19
20	13
21	13
22	15
23	9
24	18
25	14

Tool Calibration Parameters

Tool number	DC000620
Ref feeder number	DC000620
Date	13/09/05
Time	13:11:59

Sector	Value	Sector	Value
11	65	16	62
12	63	17	64
13	62	18	66
14	62	19	67
15	62	20	65

Tooth number	Y [um]
26	-6
27	-15
28	8
29	4
30	-24
31	-6
32	-8
33	-2
34	-5
35	8
36	-5
37	-0
38	1
39	4
40	16
41	-27
42	-12
43	-10
44	-15
45	6
46	-0
47	-1
48	1
49	-0
50	12

tooth number

offset per tooth

FIGURE 27

CHAPTER 7 Registration + warranty DELL PC

7.1 Registration

When a DELL PC is physically submitted from one country to another, a form should be completed and submitted. This form can be found on the following internet address;

http://www.dell.com/content/topics/reftopic.aspx/pub/ccare/transfer_intl?c=us&cs=19&l=en&s=dhs

First the Original Customer Information needs to be entered.

At least the following information is required;

Email Address: *@assembleon.com*

Original Owner: *Assembleon*

Service Tag: *check PC (see fig.....)*

Country of Original Purchase: *Netherlands*

Customer Care - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites

Search the Web Search Address http://www.dell.com/content/topics/reftopic.aspx/pub/ccare/transfer_intl?c=us&cs=19&l=en&s=dhs

* Indicates a required field.

Original Customer Information

* Email Address:

* Original Owner:

* Service Tag: System Type:

* Country of Original Purchase:

Please do not mix service tags that originate in multiple countries. Requests originating from multiple 'Country of Original Purchase' not allowed and will be returned to you for re-submission.

Service Level:

Order or Invoice Number:

[Lookup #](#)

Transfer To Location Information

* Email Address:

* First Name:

* Last Name:

Done Internet

FIGURE 28

7.2 Warranty

The PC of the Analysis tool has a warranty period of 3 years. This warranty period starts at the moment Assembleon purchased the PC from DELL..

In case support is needed, please visit the DELL website.

<http://www1.euro.dell.com/content/default.aspx?c=nl&l=nl&s=gen&~ck=cr>

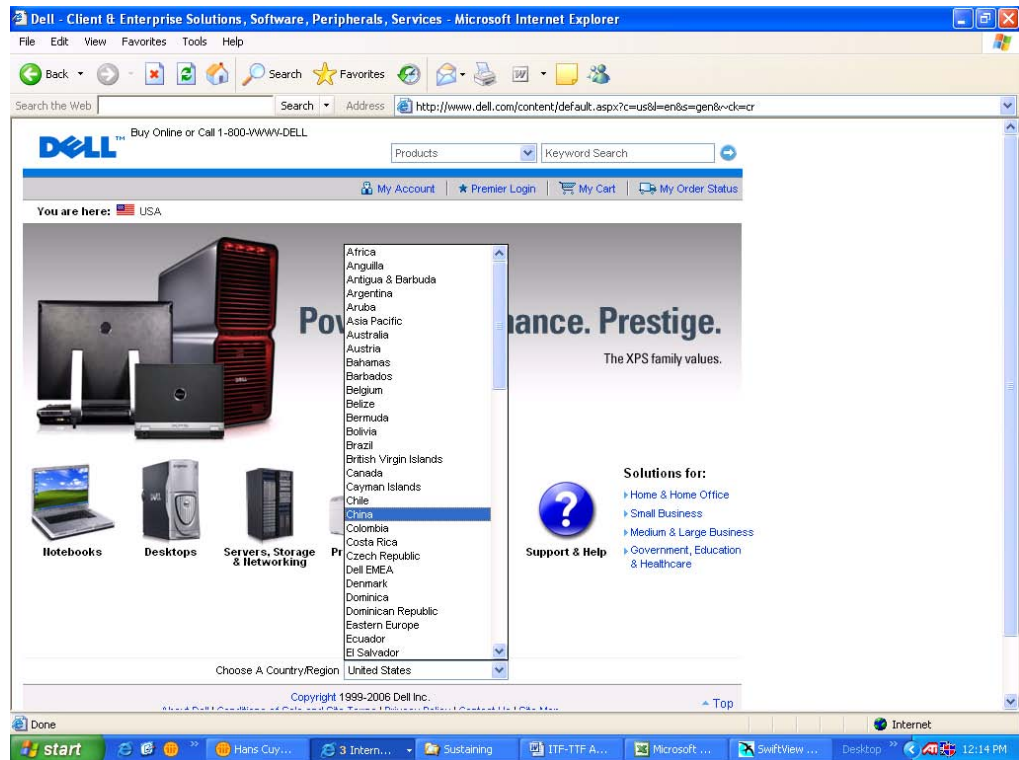


FIGURE 29

On this web page you can select your country to get the page in your own language.

On the internet you can check when the End date of a warranty period. To enter this page you need the Service Tag of your PC. This Service Tag can be found on a sticker on the PC.



FIGURE 30

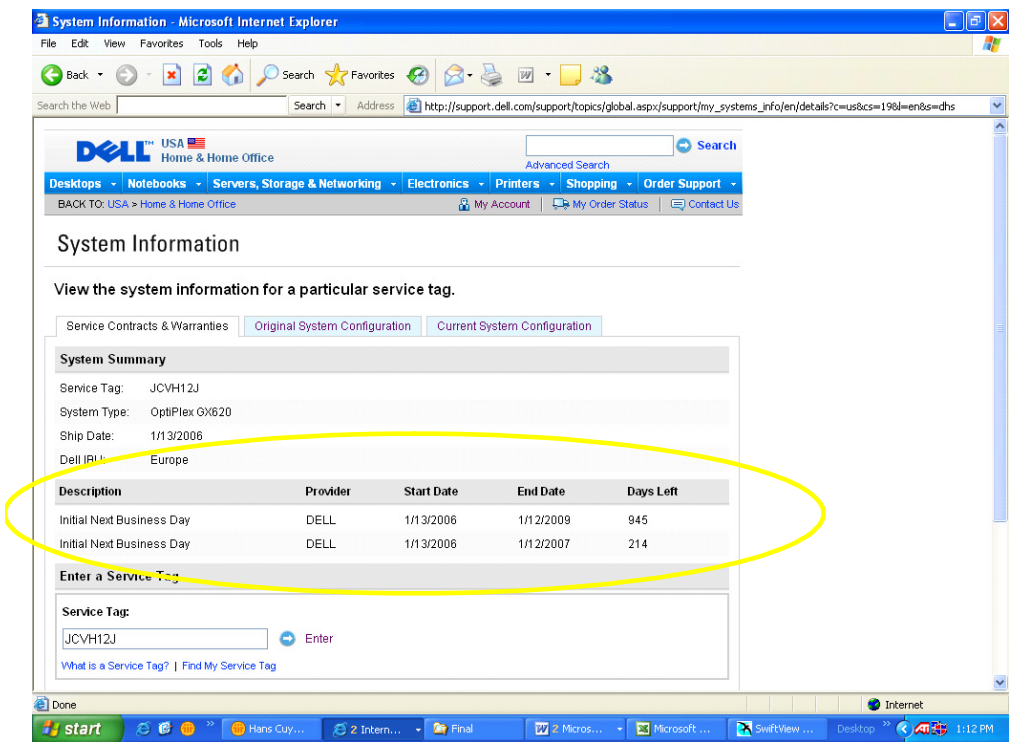


FIGURE 31

CHAPTER 8 APPENDIX A: Technical specifications calibration tool

#	Specification Item	Description
1	Feeder compatibility	<p>PA2657/00 TTF R1.0 PA2654/xx ITF2 8mm R1, R2, R3 and R4 9466 920 09911 ITF2 16mm Deep Pocket Feeder 9466 918 14881 ITF2 16mm 22" Reelholder 9466 920 10731 ITF2 24mm CV 9466 920 09921 ITF2 24mm Deep Pocket Feeder 9466 918 07381 ITF2 24mm 22" Reelholder 9466 920 10741 ITF2 32mm CV 9466 920 09701 ITF2 24mm Deep Pocket Feeder 9466 918 07391 ITF2 24mm 22" Reelholder 9466 920 10751 ITF2 44mm CV 9466 920 09411 ITF2 24mm Deep Pocket Feeder 9466 918 07591 ITF2 24mm 22" Reelholder 9466 920 10761 ITF2 56mm CV 9466 920 09711 ITF2 24mm Deep Pocket Feeder 9466 918 07601 ITF2 24mm 22" Reelholder</p> <p>Difference between ITF and TTF is autodetected (when feeder are communicating). Difference between various ITF feeders cannot be detected. The tool stores serial numbers, unique to every ITF feeder.</p> <p>Note: Reels must be removed when placed onto the tools. Small reels can be used to verify visually the pick position (field of view can only handle components in 8mm tapes only)</p>
2	Tool Reference	<p>Reference Feeder (only required if repair or suspected damage is done to tool)</p>
3	Language	English Only
4	Database	<p>Plain ASCII Text File 1 file for all ITF stored data 1 file for all TTF stored data (can be read in any Microsoft application e.g. Excel)</p>
5	PC Requirements	<p>PC Delivered with Tool. Minimum Requirement Set: Pentium III, 256 MByte internal RAM Windows XP, Service Pack 2 (or higher) 5 GByte Hard Disc Space Required CD-ROM Video Card Resolution 1280x1024, 24-bits color Keyboard, (Serial) Mouse, 1 Free COM Port, 2Free Full Height PCI Slot (PCI-CAN) Network Card or 1 Free USB Port</p> <p>A backup CD of the installation (in case of disc crashes) is provided with the use of Symantec Ghost™</p>

FIGURE 32

CHAPTER 9 APPENDIX B: Explanation of files

1. Tool calibration data:

- Directory: C:\Calibration Data\Tool\
- Filename: Tool Calibration.txt

Format of the file

- field number 1	Calibration Date	[MM/DD/YY]
- field number 2	Calibration Time	[HH:MM:SS]
- field number 3	Tool Number	[9 chars max]
- field number 4	Reference Feeder Number	[9 chars max]
- field number 5	X offset Hole 1	[µm]
- field number 6	Y offset Hole 1	[µm]
- field number 7	X offset Hole 2	[µm]
- field number 8	Y offset Hole 2	[µm]
- field number 9	X offset Hole 3	[µm]
- field number 10	Y offset Hole 3	[µm]

2. Feeder calibration data TTF:

- Directory: C:\Calibration Data\TTF R1.0\
- Filename: Feeder Calibration.txt

Format of the file

- field number 1	Feeder number	[7 digits max]
- field number 2	Lane number	[1 = upper, 2 = lower]
- field number 3	Feeder calibration date	[DD/MM/YY]
- field number 4	Feeder calibration time	[HH:MM:SS]
- field number 5	Tool calibration date	[DD/MM/YY]
- field number 6	Tool calibration time	[HH:MM:SS]
- field number 7	Tool number	[9 chars max]
- field number 8	Reference feeder number	[9 chars max]
- field number 9	Feeder Type	[TTF]
- field number 10	SW-version	[major.minor]
- field number 11	HW-version	[major.minor]
- field number 12	Pitch	[4 mm]
- field number 13	Cycle counter	[10 digits max]
- field number 14 - 37	24 Y-correction values	[-999 .. +999] note 1
- field number 38 - 61	24 X-deviations	[µm]
- field number 62 - 85	24 Y-deviations	[µm]

[note 1](#): values are in numbers of encoder edges

3. Feeder calibration data ITF:

- Directory: C:\Calibration Data\ITF2\
- Filename: Feeder Calibration.txt

Format of the file

- field number 1	Feeder number	[7 digits max]
- field number 2	Feeder calibration date	[DD/MM/YY]
- field number 3	Feeder calibration time	[HH:MM:SS]
- field number 4	Tool calibration date	[DD/MM/YY]
- field number 5	Tool calibration time	[HH:MM:SS]
- field number 6	Tool number	[9 chars max]
- field number 7	Reference feeder number	[9 chars max]
- field number 8	Feeder Type	[ITF2]
- field number 9	Feeder width	[Unknown]
- field number 10	SW-version	[major.minor]
- field number 11	HW-version	[major.minor]
- field number 12	Pitch	[4 mm]
- field number 13	Cycle counter	[10 digits max]
- field number 14 - 33	20 Y-correction values	[-999 .. +999] note 1
- field number 34 - 83	50 Y-deviations	[µm]
- field number 84 - 133	50 X-deviations	[µm]

[note 1](#): values are in numbers of encoder edges

4. Tool calibration settings:

- Directory: C:\Program Files \Feeder Calibration Tool\
- Filename: FeederCalibrationtool.ini

Format of the file

- Directory path of the calibration information file.
- Camera 1 settings (FOV/PixelSize/ID)
- Camera 2 settings (FOV/PixelSize/ID)

5. Reference feeder settings:

- Directory: C:\Program Files\Feeder Calibration Tool\
- Filename: Reference Feeder.ini

This file contains the information from the measurement report delivered with the reference feeder.

Format of the file

Reference feeder number	[9 chars max]
Tool calibration interval	[HHHH]
Last Tool calibration date	[DD/MM/YY]
Last Tool calibration time	[HH:MM:SS]
Measurement Report expire date	[MM/YY]
- Hole 1 ITF2	
Measured position X	[µm] note 1
Measured position Y	[µm] note 1
- Hole 2 TTF (Upper Lane)	
Measured position X	[µm] note 1
Measured position Y	[µm] note 1
- Hole 3 TTF (Lower Lane)	
Measured position X	[µm] note 1
Measured position Y	[µm] note 1

note 1 : Measured position according to the reference measure report
After (re)calibration of the reference feeder, these sections must be editing.



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Tape Loading unit

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MANUAL TITLE	MANUAL NUMBER	SUPPLIED WITH PA NUMBER(S)
Tape Loading unit	4022 591 91531 (formerly part of 5322 871 61604 / 5322 871 61605)	PA 2601/0x

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PA260 I/0x: ITF2 Tape Loading Unit

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CHAPTER I Introduction

I.1 General Introduction

This manual is intended for the following Tape Loading Units exist in the market:

- PA2601/00 : Generation 1 Tape Loading Unit
- PA2601/01 : Generation 2 Tape Loading Unit. Long Life

This manual is intended to be a guideline for operating, handling and corrective repair.

The Tape Loading Unit (TLU) is for loading tapes onto the Intelligent Tape Feeder (ITF) only. It cannot be used for other feeder types. The unit feeds the required 12VDC to the feeder by means of:

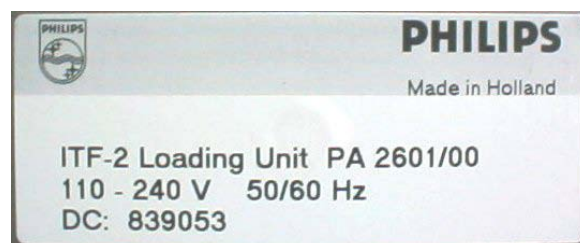
- Battery pack. The power of this battery pack is used when the unit is not connected to the mains. When the mains is connected there is no power consumption from the battery.
- Internal 12VDC power supply (transformer). This unit supplies the required voltage when the unit is connected to the mains. The transformer is suitable for 100 to 240 VDC input.

I.2 Identification

All loading units produced have been tested and are provided with an official label as shown in Figure 1.2.



NOTE: Do not remove the label. Labeling is used for warranty and configuration control. Use this number for all correspondence.



[Label for PA2601/01 not shown, but has identical format]

FIGURE I.2

Identification label

1.3 Installing the Tape Loading Unit

The tape loading unit can be installed in the following three ways:

- On the provided space of the Feeder Storage Cart (PA2602/00)
- Fixed by screws on any table,
- Clamped with a collet-chuck

1.3.1 Mounting the tape loading unit onto the Feeder Storage Cart

The tape loading unit can be mounted directly onto the feeder storage cart. Use the 4 pre-drilled holes of the cart and the 4 screws which are delivered with the loading unit. Place and attached the unit at the location as shown in Figure 1.3.1.

Required tool: Allen key (S=4mm)



FIGURE 1.3.1

Tape Loading Unit mounted onto the Feeder Storage Cart

1.3.2 Mounting the tape loading unit onto any table

The Tape Loading Unit can be attached, directly, onto any object. Drill 4 holes of $6+0.5$ mm into the platform of the object. The layout of the holes is shown in Figure 1.3.2. Use, if possible, the 4 screws which are delivered with the loading unit or 4 new Allen screws of M5 with the correct length.

Required tools:

- Drilling machine
- Drill $6+0.5$ mm

The front hole should not be any further than 185mm from the front of the table in order for the feeders to fit onto the tape loading unit.

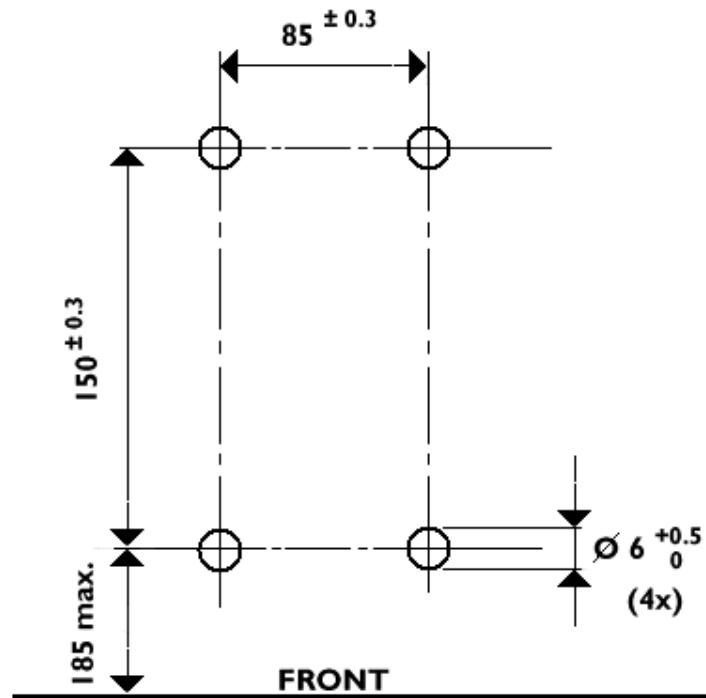


FIGURE 1.3.2

Drill locations [all sizes in millimeters]

1.3.3 Clamping the tape loading unit onto an object

For “quick” use, on different location, the tape-loading unit can be clamped onto a table. Figure 1.3.3 shows an example of a loading unit clamped onto a table.

Required tool: Collet-chuck



NOTE: For stability reasons, it is preferred to attach the loading unit to an object by means of screws whenever possible.



FIGURE 1.3.3

Clamping of the Loading unit onto an object

I.4 Battery Life Cycle

Figure 14 shows the relation between the discharge depth and number of cycle servicings. As the discharge depth increases during servicing the number of service cycles decreases.

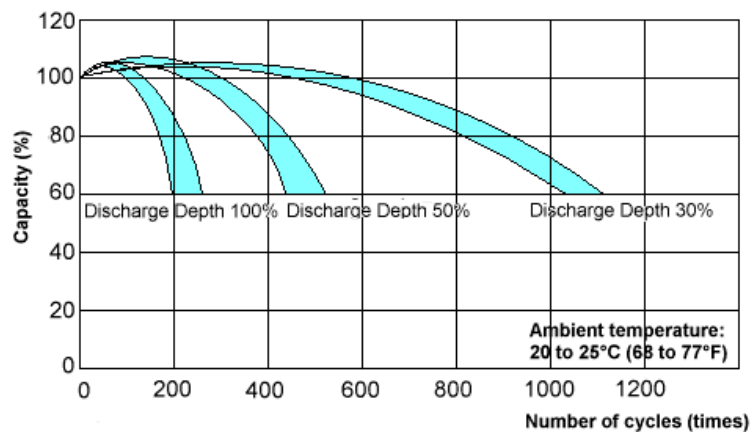


FIGURE I.4

Cycle service life of battery



NOTE: When batteries are empty, do not dispose in regular waste can. Batteries are chemical waste and should only be disposed in the therefore dedicated disposal or recycle box.

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CHAPTER 2 Handling

2.1 Preparation

Needed tool to clean: Vacuum cleaner or hairbrush

- Make sure that the loading unit is clamped or attached in a stable way onto a table. See Chapter 1.
- Make sure that the loading unit is free of components and debris. Clean if necessary.
- Make sure that the intelligent feeder is free of components and debris. Clean if necessary.

2.2 Tape Loading Units Operating Modes.

Table 2.2. gives an overview of the various operating modes of the Tape Loading Unit (equipped with a feeder). This is mostly depended if the mains is connected and the power is switched On or Off.

Mode	Mains	Switch	Description
1	Connected	Off	<ul style="list-style-type: none">■ Charge Mode: Battery is charging■ Feeder will not function
2	Connected	On	<ul style="list-style-type: none">■ Charge Mode Disabled: Battery not charging■ Feeder functions
3	Disconnected	On	<ul style="list-style-type: none">■ Charge Mode Disabled: Battery not charging■ Feeders functions when Battery is charged
4	Disconnected	Off	<ul style="list-style-type: none">■ Charge Mode Disabled: Battery not charging■ Feeder will not function



NOTE: Protect the battery against discharging. Switch Off the power button if the unit will not be used for a long time. The feeder can be disconnected from the unit during charging.

2.3 Operating the Tape Loading Unit.

2.3.1 Connecting the Mains

The Tape Loading Unit is delivered with two different main power cables (Continental European and US version). Select the correct cable or purchase locally the correct –locally approved- cable



NOTE: The battery pack is shipped charged. When it has been stocked for a long while it might have been discharged. When using the Tape Loading Unit for the first time, charge the battery for the first time for 10 hours for 100% load.

Load Specifications:

- Discharge time (unit is ON): 100 hours
- Load in environmental temperature 10° - 35° C.
- 5 hours charging = 85% capacity load
- 10 hours charging = 100% capacity load
- Unit does not require discharging before charging.

2.3.2 Load Tape into Feeder

Loading tape into the feeder is described in Chapter 2 of the Intelligent Tape Feeder Tab of this manual. It is also explained on the Quick Reference Card of this feeder.

2.3.3 Low Battery Power

When the battery is almost empty it is still possible to activate the green LED on the Tape Feeders. However, when the Tape feeder is indexed, the voltage can drop to a too-low level. In this case the feeder cannot be indexed anymore and the feeder will start to generate an error signal (red LED will blink). Be aware that the feeder has no error, but this can be caused by too low battery power of the Tape Loading Unit.

To isolate whether it is the feeder or the Tape Loading Unit:

- Connect the Tape Loading Unit to the Mains.
- Charge the Battery and try again
- Use another Tape Loading Unit.

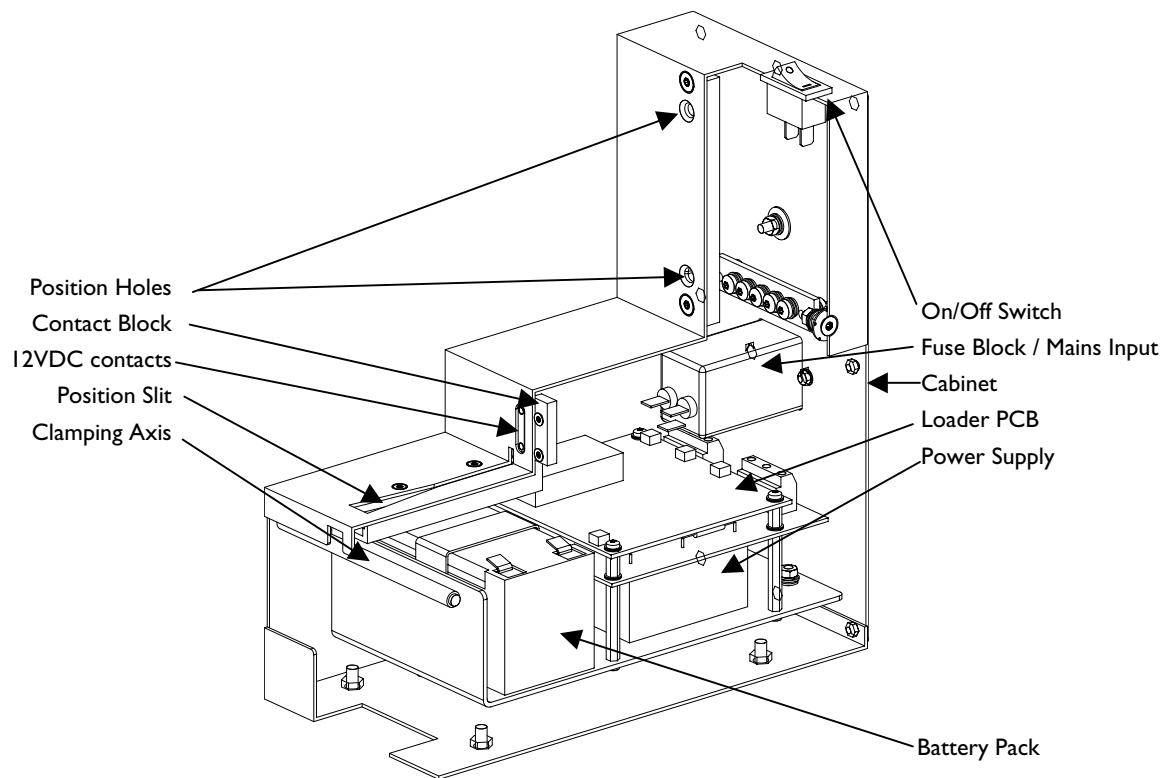
CHAPTER 3 Functional Description

3.1 Operating Modes

The various operating modes are described in Chapter 2.2

3.2 Module Overview

Figure 3.2 provides an overview of the Tape Loading Unit assembly



[This drawing shows the internals of the PA2601/01 Tape Loading Unit]

FIGURE 3.2

Tape Loading Unit assembly

Functional Description

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CHAPTER 4 Maintenance Description

4.1 Preventive Maintenance Schedule

Every feeder fitting check consist of:

- Check the loading unit interface on: damages, dirt and dust.
- Check the feeder interface on: damages, dirt and dust



NOTE: Do not use oil or other chemicals or lubricants. Clean feeder only by means of the equipment as given in section 4.2.1. Chemicals damage the plastic parts or may cause short circuits in the electrical parts.

ITEM	EVERY FEEDER FITTING	DAILY	WEEKLY	OPERATING HOURS				REPLACEMENT
				500	1500	3000	6000	
Tape loading unit interface								
■ Clean	0.1 min.							
Tape feeder interface								
■ Clean	0.1 min.							
Tape loading unit								5 Years or 150.000 feeder exchanges
■ Replace								
Total	0.2 min.							

TABLE 4.1 Preventive Maintenance Schedule:Tape Loading Unit

4.2 Maintenance Instructions

4.2.1 Required Equipment

- Vacuum cleaner
- Isopropanol
- Fiber free tissue
- Hair brush



NOTE: When using isopropanol, apply to local safety regulations.

4.2.2 Tape Loading Unit Interface

Clean the interface with a vacuum cleaner or hair brush and fiber free tissue lightly moistened with isopropanol.

4.2.3 Tape Feeder Interface

Clean the interface with a vacuum cleaner or hair brush and fiber free tissue lightly moistened with isopropanol.

4.3 Corrective maintenance

In general, parts only need to be exchanged when mechanically or electrically defect. The average lifetime of a tape loading unit is 5 years **150.000** feeder exchanges and a service level of approximately 6.5%¹. This can only be achieved with:

- Regular maintenance as described in 4.2.
- Correct handling of the unit.
- Careful handling at the unit (e.g. do not let it fall down).
- Storage in clean places.

Replacements of parts can be found in chapter 6.

¹ Valid for the PA2601/01

CHAPTER 5 Trouble Shooting

5.1 Introduction

The sections 5.1.1, 5.1.2 and 5.1.3 give an overview of problems that are experienced at the Tape Loading Unit. It will relate to the probable cause and the remedy to solve this problem. For more detailed troubleshooting refer to section 5.2: “fault finding procedure”.

5.1.1 General checks before trouble shooting



TIP: Use a correct functioning feeder for testing the Tape Loading Unit. Use the LEDs signaling of the feeder for trouble shooting. Use the green LED to check if the Tape Loading Unit works. Use the red and/or yellow LED as alternative for checking i.e. low battery problems.

- Connect the Tape Loading Unit to mains. One of the three LEDs will blink or light up.
- Set switch to On ('I') position
If *none* of these blinks or lights up, make sure to check first the following aspects before any problem isolation is performed:

Probable Cause	Remedy	Section
Power source not connected correctly	Check the VAC connection	I.5
Incorrect connection between loading unit and feeder	Check loading unit - feeder matching	QRC
Battery pack is not fully charged or run out (stand alone use)	- Recharge the battery pack - Recharge the battery pack according the correct mode	I.5 I.5.1
Main fuse(s) disconnected/defective	Check and/or replace the fuse(s)	6.2.1.1
LED blinks red	Recharge the battery	I.5.2
Contact stift (s) damaged and/or defective	Check and/or replace contact pins	N.A.
Green LED blinks	Check if feeder index setting = 0	QRC

TABLE 5.1.1

General checks before trouble shooting

Trouble Shooting

For feeder loading and further trouble shooting refer to the PA2654/xx QRC and Chapter 2 of the Intelligent Feeder Manual: 5322 871 61604.

5.1.2 Trouble shooting with 110-240 VDC input (first check)

Connect the feeder to mains and switch on the Tape Loading Unit:

- Feeder LEDs are blinking
- Tape Loading Unit seems dead

Check or correct the following aspects:

Probable Cause	Remedy	Section
Main power switch cable(s) Disconnected/damaged	Check and correct	6.2.1.2
Contactblock cable (s) disconnected/damaged	Check and correct	6.2.1.2
Net-entry cable(s) L, N Disconnected/damaged	Check and correct	6.2.1.2
+V or -V cable(s) from/to the PCB disconnected/damaged	Check and correct	6.2.1.2
Power supply fuse disconnect/defective (Green LED does not blinking)	Check and/or replace fuse 1	6.2.1.2
Power supply defective	Replace the power supply	6.2.2
Loader unit fuse 1 and/or 2 disconnect/defective	Check and/or replace fuse 1 and/or 2	5.2 & 6.2.1.3
Loader unit PCB disconnect/defective	Check and/or replace	5.2 & 6.4
Main power switch disconnected/damaged	Check/replace the switch	6.2.5

TABLE 5.1.2

Trouble shooting by 110-240 VDC input

5.1.3 Trouble shooting with 12 VDC battery pack input (second check)

1. Check the general and first check (see section 5.1.1 and 5.1.2); make sure that the power supply and loader unit is in a proper condition.
2. Charge the battery for at least 4-5 hours.
3. *Disconnect the current cable from the mains.*
4. If **non** of the feeder LEDs are lighting up or blinking and charging doesn't appear to happen, check or correct the following aspects:

Probable Cause	Remedy	Section
Battery pack cable(s) damages and/or disconnected	Check and correct	6.2.1.2 & 6.2.4.2
Battery pack does not charge	Check battery pack	5.2 & 6.2.4.1
Battery pack defective	Replace battery pack	6.2.4.2
Fuse F2 blown	Replace Fuse F2	6.2.1.3

TABLE 5.1.3

Trouble shooting by 12 VDC battery pack input



NOTE: A simple fault finding procedure can be found in the next section. Eventual adjustment procedures can be found in Chapter 7 while Drawings and Diagrams can be found in Chapter 9.

5.2 Fault finding procedure

The Tape Loading Unit basically exists of the following units:

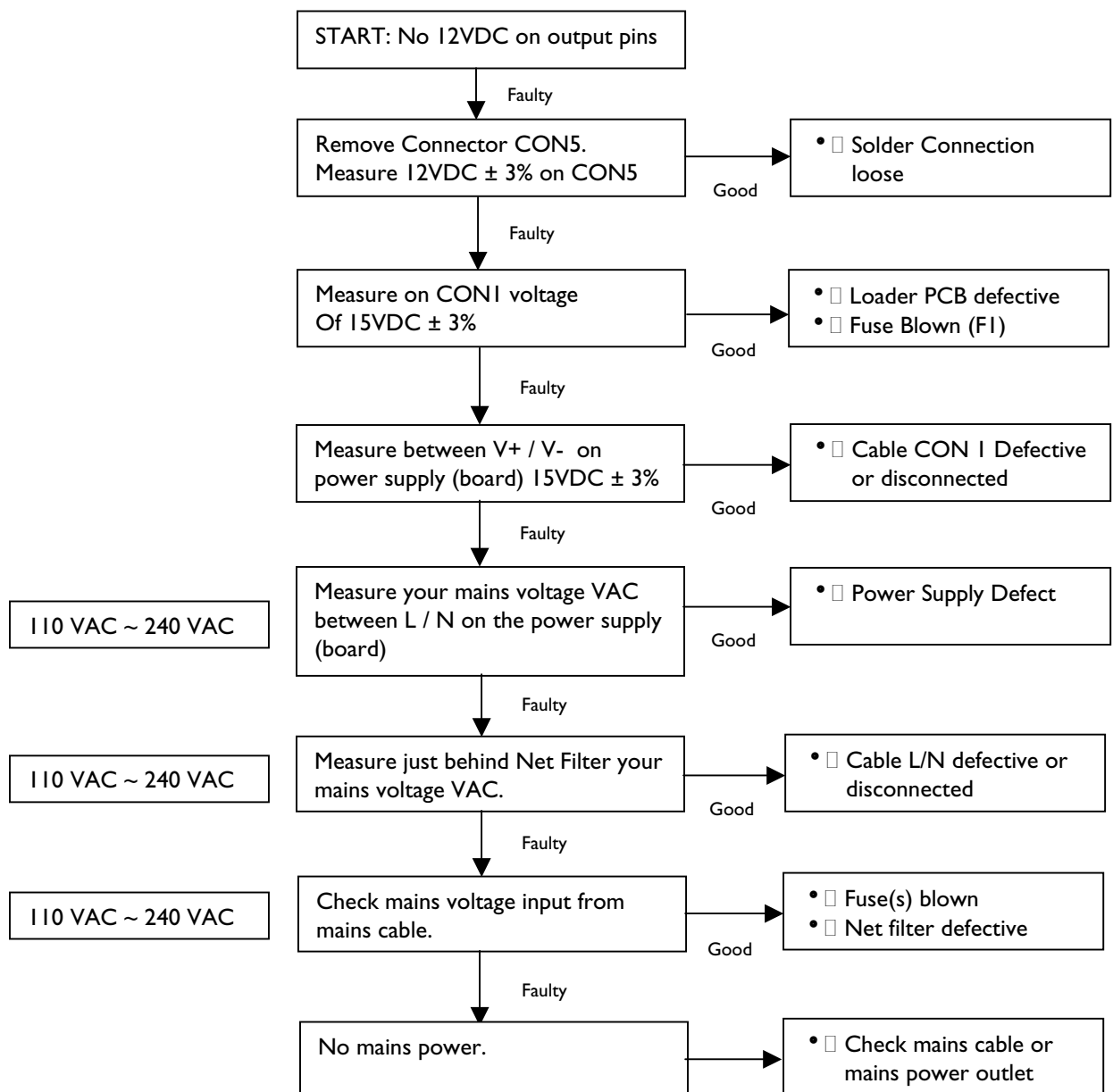
- Mains Input
- Power Supply
- Loader Unit
- Battery
- Output

To isolate which module may be faulty, in order to replace, the following checks can be performed (on a basic level) to find out the faulty module.



WARNING

TO AVOID ELECTRICAL SHOCK, DO NOT OPEN THE TAPE LOADING UNIT WITH THE MAINS CONNECTED. SERVICING TO BE PERFORMED BY QUALIFIED PERSONNEL ONLY.



5.3 Checking Battery Degradation

If the battery is suspected, perform the following procedure to check the degradation of the Battery.

Step 1: Discharge the battery completely.



NOTE: Do **NOT** short circuit when trying to discharge !!

Step 2: If discharged, disconnect the '+' cable from the battery. Leave the '-' connection and the CON2 connector (on the Loader PCB) in its place.

Step 3: Place a multi-range instrument, in the DC current mode, between the loose end of the '+' cable and the '+' contact of the battery.

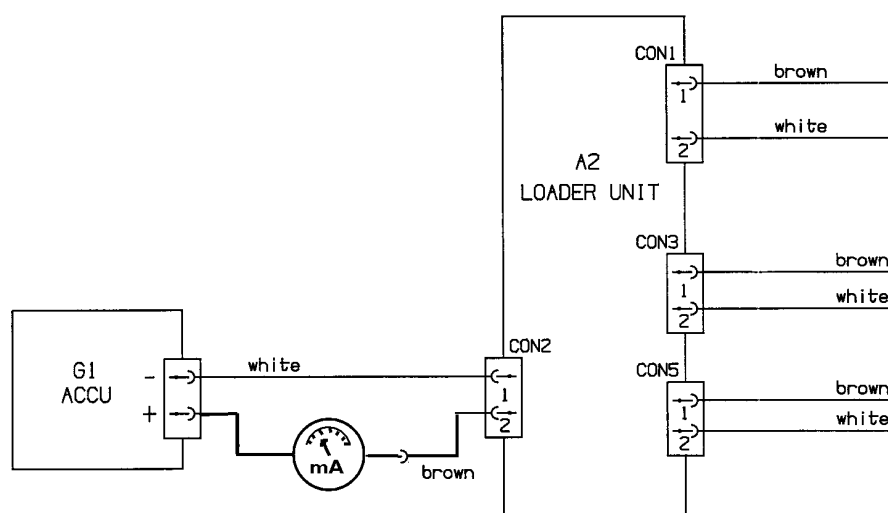


FIGURE 5.3

Measuring battery

Step 4: If connected to the mains, a charge current of approximately 50mA will be measured on an empty (fully discharged) battery. The battery is OK. If the measured loading current is in the order of 10mA or less for an empty battery, the battery is degraded and needs to be replaced (check out the replacement procedures).

5.4 Voltage Check Points

At the connectors, the following Voltages should be expected when the unit is working without errors (see figure 5.4a).

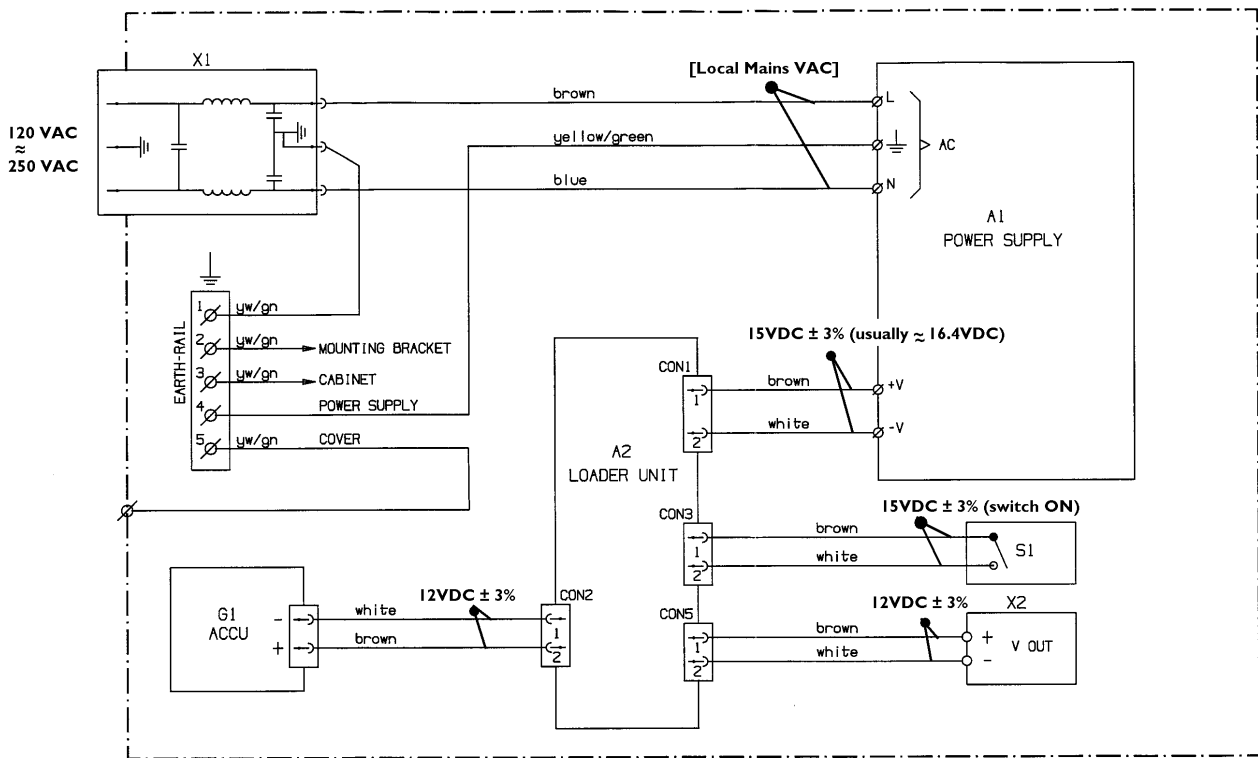


FIGURE 5.4a

Voltage values at connector points.

The Loader PCB has 6 measure points (MP1 to MP6). Depending if the unit is switched ON or OFF, the values may differ. See figure 5.4b. Many additional information cannot be retrieved from these measurepoints. For the exact location in the schematic diagram of the Measure Points, please refer to chapter 9.

Trouble Shooting

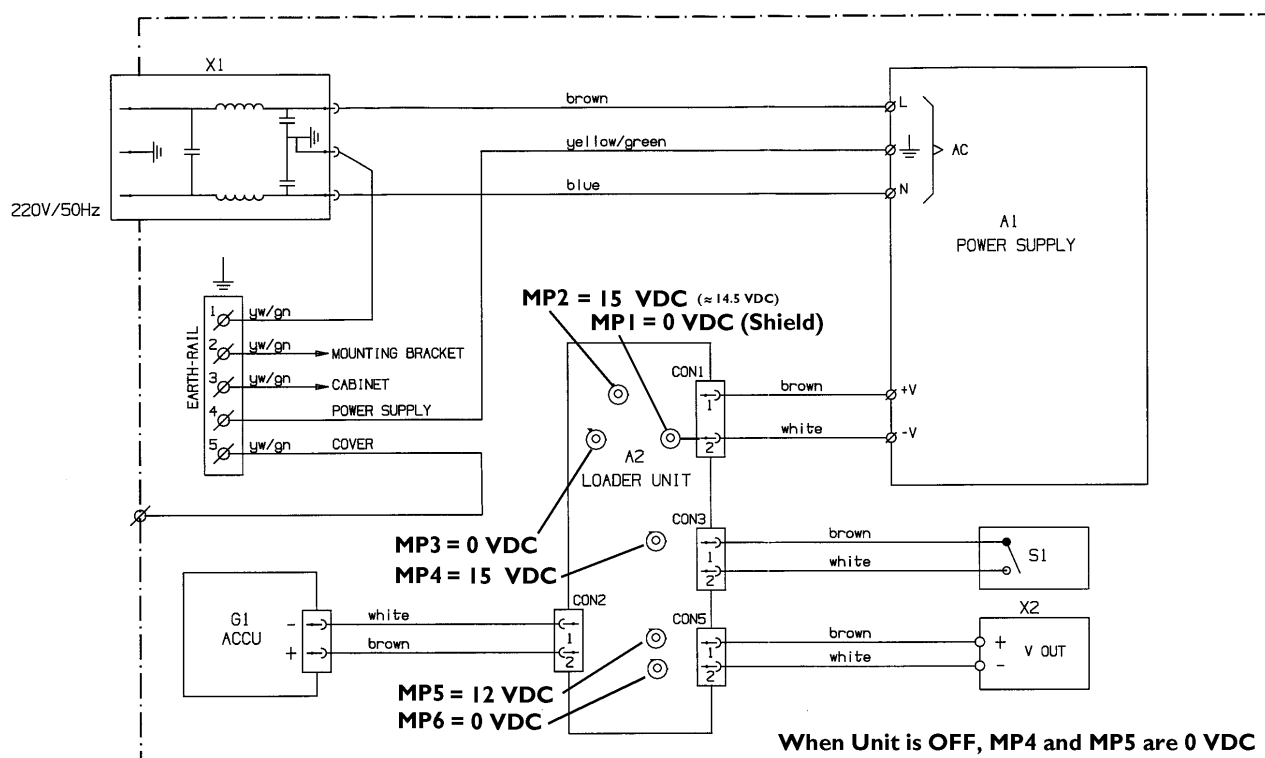


FIGURE 5.4b

Voltage values at measure points.

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CHAPTER 6 Replacement Instructions

6.1 List of Tools

Table 6.1 gives recommended list of tools and materials for repairing and cleaning of the Tape Loading Unit. All tools can be obtained locally.

Recommended tools and materials	
■	Small brushes or vacuum cleaner
■	Screw drivers Cross-slotted <ul style="list-style-type: none"> • □ Philips no.2
■	Screwdriver normal <ul style="list-style-type: none"> • □ Philips no. 2
■	Screwdrivers Torx: <ul style="list-style-type: none"> • □ Torx no. T8 • □ Torx no T10 • □ Torx no. T20
■	Allen key S=4mm
■	Digital multi-range instrument (with at least Volts and Current modes DC and AC)
■	Earth wrist wrap (to prevent ESD damage)
■	Wrench 5mm.

TABLE 6.1

List of tools and materials



WARNING

TO AVOID ELECTRICAL SHOCK, DO NOT OPEN THE TAPE LOADING UNIT WITH MAINS CONNECTED. SERVICING TO BE PERFORMED BY QUALIFIED PERSONNEL ONLY.



WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTUREY. BEFORE REMOVING THE COVER FROM THE HOUSING, DISCONNECT FIRST THE 110-220 VDC MAINS.



CAUTION

TO AVOID COMPONENT DAMAGE BY ESD, CONNECT BODY MASS TO ESD POINT BEFORE OPENING THE TLU.



CAUTION

OBSERVE TO THE FOLLOWING PRE-CAUTIONS FOR THE BATTERY PACK:

- **KEEP AWAY FROM FIRE AND NEVER DISCARD IN FIRE.**
- **DO NOT SHORT-CIRCUIT THE BATTERY TERMINALS.**
- **IN CASE THE BATTERY IS BROKEN ACCIDENTALLY, AND THE ELECTROLYTE (DILUTE SULPHURIC ACID) IS SPILLED ON SKIN OR CLOTHES, RINSE IMMEDIATELY WITH PLENTY OF WATER. IF THE ELECTROLYTE CONTAMINATES THE EYES, WASH THEM WITH WATER AND THEN REPORT IMMEDIATELY TO A PHYSICIAN.**
- **RECHARGE THE BATTERY IMMEDIATELY AFTER USE (DISCHARGE).**
- **IF NOT USED OVER AN EXTENDED PERIOD, STORE THE BATTERY IN A COOL PLACE. MAKE SURE TO RECHARGE IT ONCE EVERY 6 MONTHS.**
- **BEFORE USE, CAREFULLY READ THE INCLOSED BATTERY INSTRUCTIONS.**

6.2 Replacement Instructions

Chapter 6.2.1 will describe the replacement instructions of spare parts available on the PA2601/00 Tape Loading Unit while chapter 6.2.2. will have similar instructions for the PA2601/01 Tape Loading Unit.



WARNING

REPLACEMENTS ONLY TO BE PERFORMED BY QUALIFIED PERSONNEL IN APPROPRIATE WORKSHOPS.



WARNING

TO FULFILL ALL SAFETY REGULATIONS, ALL REMOVED SCREWS MUST BE RE-ATTACHED TO THE UNIT. MISSING SCREWS WILL VIOLATE LOCAL SAFETY REGULATIONS.

6.2.1 Replacement Instructions: PA2601/00

The replacement procedures of the PA2601/00 ITF2 Tape Loading Unit will refer to the item numbers as shown in figure 6.2.1.

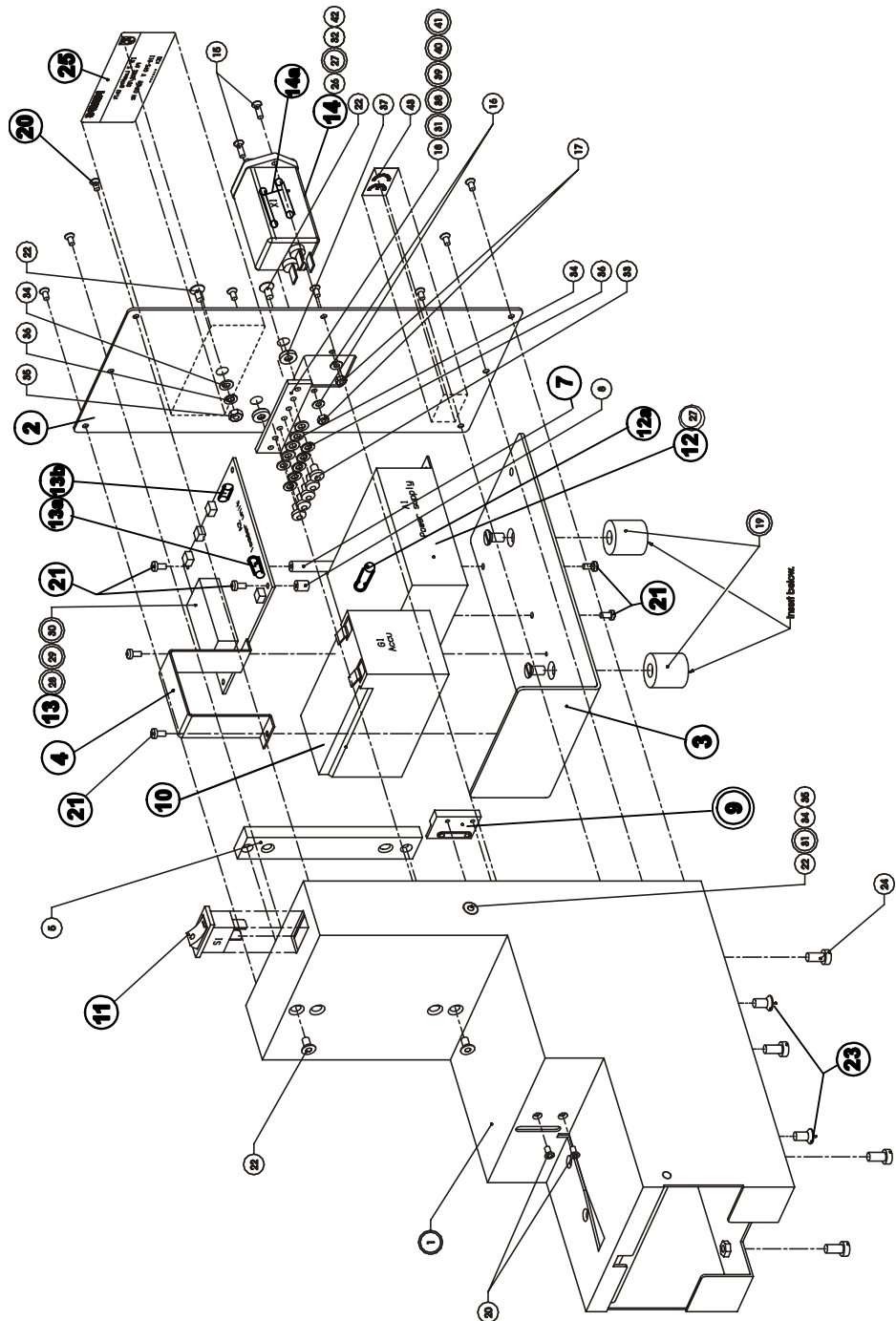


FIGURE 6.2.1

Layout: ITF2 Tape Loading Unit PA2601/00

6.2.1.1 Replacement: Mounting Bracket (Item 3)

Removing the mounting bracket is required for replacement of most parts that reside on the mounting bracket. It will also make other items in the housing more accessible.

Step 1: Lay the Tape Loading Unit on its side and from the bottom of the unit, remove the two Torx Screws M5 x 10 (items 23)

Put screws aside and do not loose screws.



Step 2: Place the Tape Loading Unit straight up again and remove from the rear side the 8 Torx Screws M3 x 6 (items 20). Remove the back plate (item 2) carefully as there are cables attached to it.

Put screws aside and do not loose screws.



Replacement Instructions: PA2601/00

Step 3: At the front of the PCB, remove the two cables named CON3 and CON5.



Step 4: Slide the unit out of the cabinet.



6.2.1.2 Replacement: Battery Pack (Item 10)

Step 1: Remove the mounting bracket from the Tape Loading Unit as described in chapter 6.2.1.1.

Step 2: On the battery pack, disconnect the wires from the '+' and '-' pins.

Step 3: Loosen (do not remove) the 2 screw (item 21) of the battery bracket. The screws are only loosened as adding the screws (because of tight space) might give difficulties.

Step 4: Slide the battery pack from underneath its bracket.

Step 5: Add the new battery pack in reverse order of steps 1 to 4.

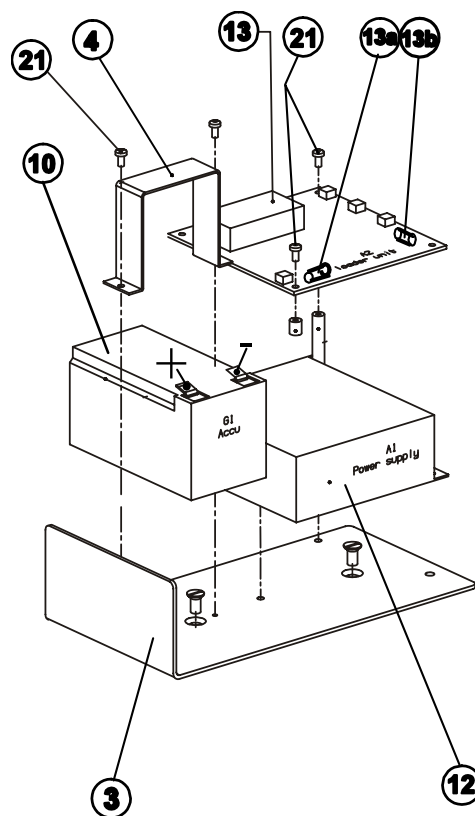


FIGURE 6.2.1.2

Replacement: Battery Pack (Item 10)

6.2.1.3 Replacement: Power Switch (Item 11)

Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.1.1. (The mounting bracket does not necessarily have to be removed).

Step 2: Remove at the bottom of the switch the two wires (CON 3 cable). Place the cable aside and do not loose cable.

Step 3: Press the two clips at the side of the switch housing and remove the complete switch housing from the top of the cabinet.

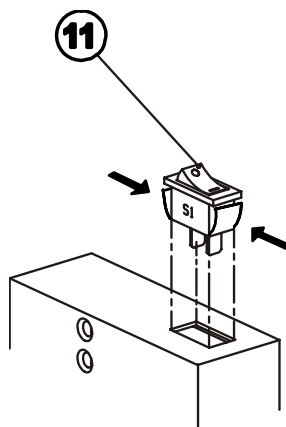


FIGURE 6.2.1.3.

Replacement of the power switch

Step 4: Assemble the power switch housing in reverse order of step 1 to 3.

6.2.1.4 Replacement: Power Supply (Item 12)



NOTE: This power supply will be replaced by the 'Power One – Melcher' Power supply in the near future. When this upgrade is applicable, refer to section 6.2.1.9.

Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.1.1. (The mounting bracket does not necessarily have to be removed).

Step 2: Remove the Loader PCB from the power supply as described in chapter 6.2.1.6. Do not loose screws, o-rings and isolation rings.

Step 3: Disconnect all wires connected at the front panel of the power supply unit (V+, V-, PE (Protected Earth), L and N).

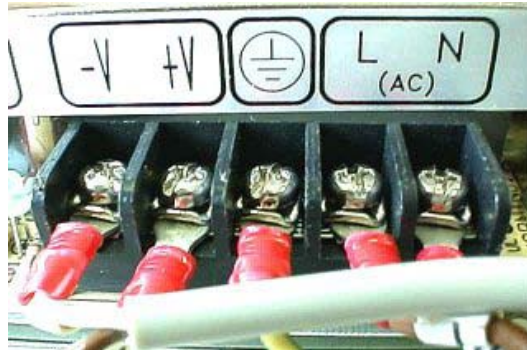


FIGURE 6.2.1.4a

Disconnect wiring from the power supply unit.

Step 4: Turn the mounting bracket upside down and remove from the bottom the two torx screws (item 21) that secure the power supply to mounting bracket.

Pillar (item 7) will come loose. Do not loose this item.

Step 5: Open the Power Supply Unit by removing the one screw at the front-left side (item 12c) of the power supply. Open the cabinet of the power supply by slightly moving it backwards and then tilting it to the left.

Step 6: Remove the short pillar (item 8) by removing the torx screw (item 12b) from the inside of the power supply cabinet.

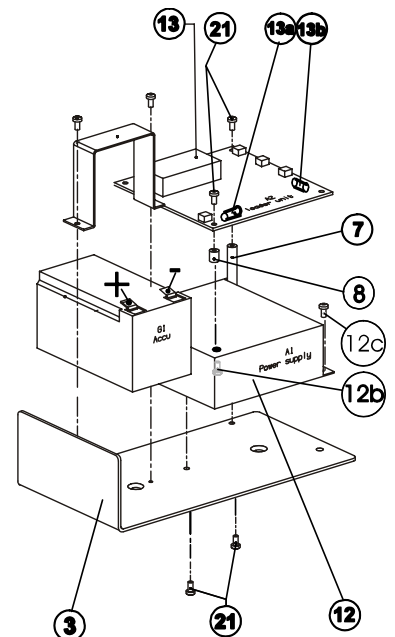


FIGURE 6.2.1.4b

Replacement: Power supply unit.

Step 7: Assembling is performed in reverse order of step 1 to 6.

Step 8: After all items are assembled and the power supply is connected (and the unit is switched ON), the Green LED on the Power supply PCB should switch ON.

Replacement Instructions: PA2601/00

Step 9: The Power Supply may require **16.3V adjustments** after replacement. Please refer to the adjustment procedures of Chapter 7.

6.2.1.5 Replacement: Power Supply Fuse (Item 12a)

Step 1: Remove the Power Supply Unit as described in chapter 6.2.1.4.

Step 2: If the cabinet is open, just behind the wire terminal, the fuse FS1 is located. Replace this fuse when blown.

Fuse: 3A, 250V

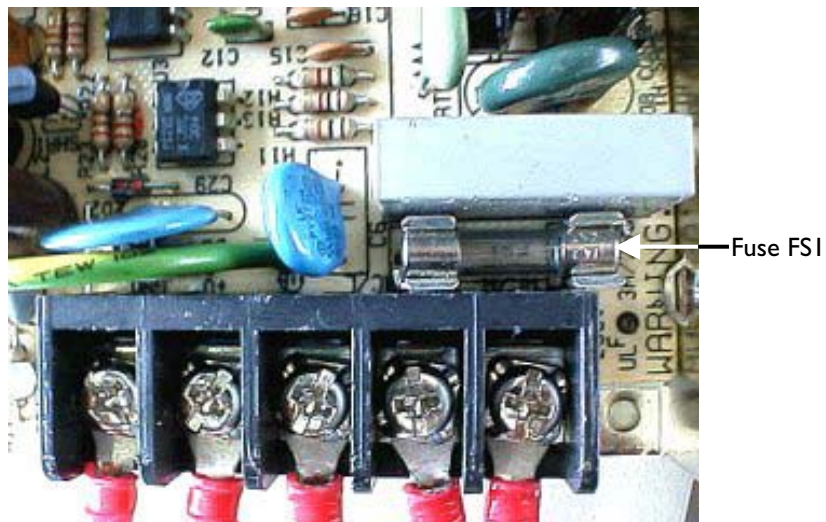


FIGURE 6.2.1.5

Replacement: Power supply unit fuse FS1

6.2.1.6 Replacement: Loader PCB (Item 13)

Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.1.1. (The mounting bracket does not necessarily have to be removed).

Step 2: Disconnect from the Loader PCB the connectors CON1 and CON2.

Step 3: Remove the two torx screws (items 21) that hold the Loader PCB to the bracket and Power supply.

Step 4: Assembling is done in reverse order of step 1 to 3

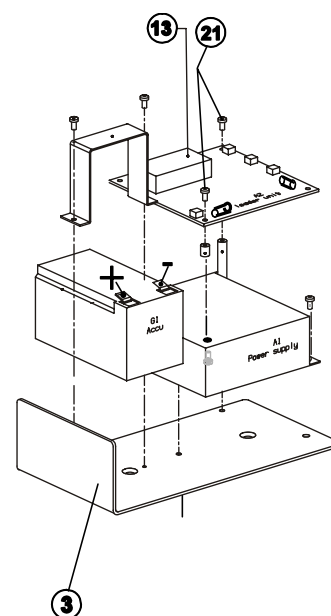


FIGURE 6.2.1.6

Replacement: Loader PCB.

Step 5: The Loader PCB might require **14.3V Adjustment**. Please refer to the adjustment procedures in Chapter 7.f

6.2.1.7 Replacement: Loader PCB Fuses (Items 13a and 13b)

Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.1.1. (The mounting bracket does not necessarily have to be removed).

Step 2: Replace the Fuses (F1) or (F2) of which the location is shown in figure 6.2.1.7.

Fuse F1: When blown, the unit does not function when mains is connected.

Fuse F2: When blown, power from the battery (and charging of the battery) is disabled.

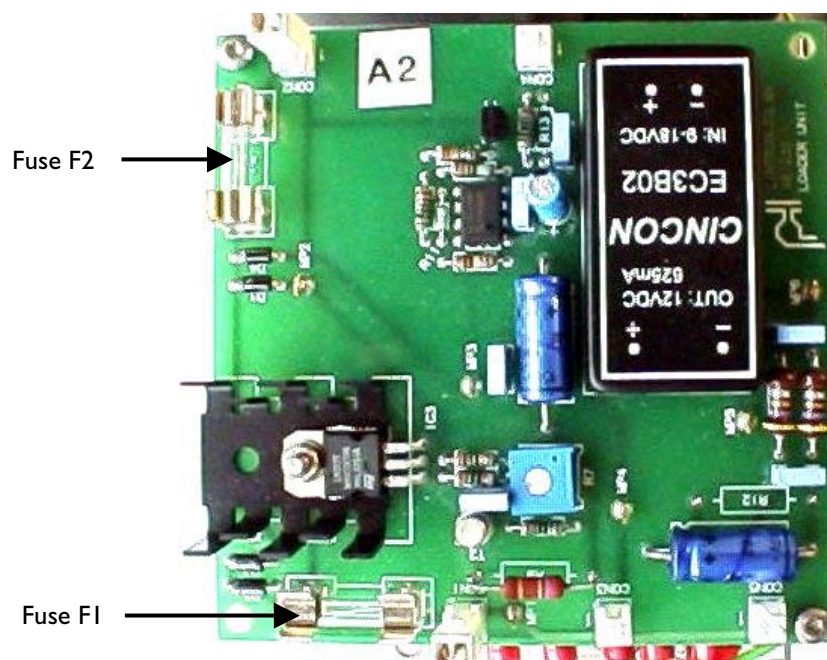


FIGURE 6.2.1.7

Replacement: Loader PCB fuses.

6.2.1.8 Replacement: Net Filter Fuses (Items 14)



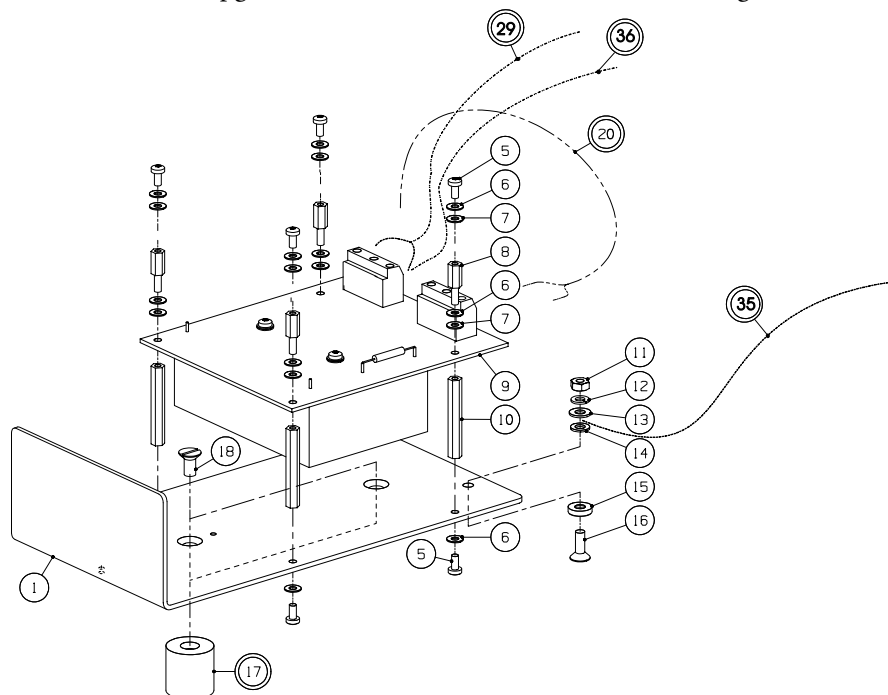
NOTE: When the Loading Unit Power supply is upgraded with the Power-One Melcher, the fuses must be changed from 1A to 2A each. For upgrade, refer to section 6.2.1.9.

- Step 1:** Remove mains cable and switch off the Tape Loading Unit.
- Step 2:** Pull out the fuse holder at the rear side of the Tape Loading Unit (the unit does not need to be opened).
- Step 3:** Replace any of the defective Fuses
Mean Well Power Supply: Slow T 1A, 250V
Power – One (Melcher): Slow T 2A, 250V
- Step 4:** Close fuse holder.

**FIGURE 6.2.1.8****Replacement: Net filter Fuses (Mains)****6.2.1.9 Replacement: Mean Well PSU to Power-One (Melcher) PSU.**

To guarantee better performance of the power supply, the current PSU is replaced. It may occur that with orders of the current power supply, the new power supply is send as a new replacement (the old version will go obsolete). Performing the upgrade is described below.

The Power-One Upgrade Kit will include the items as shown in figure 1.

**FIGURE 6.2.1.9a****Power-One upgrade kit contents**

Replacement Instructions: PA2601/00

Item	Description	Qty	Item	Description	Qty
1	Mounting Bracket	1	14	Earth Wash St Cu N 14,3x8 NL-B 044	1
5	Pan Scr Stl St M3 x 6 UN-B 1034	8	15	Csk Wash St A4 4,3 MFM – B 1029	1
6	Wash Br Ni 3,2 x 7 UN-B 050	12	16	Csk Scr Stl M4 x 12 UN-B 1035	1
7	Wash Press B 3,2 x 7 UN-B 050	7	17	Bush	2
8	Spacer M3 x 10	4	18	Csk Scr Stl St A4 M5 x 10	2
9	Converter On-Board	1	20	Cable CON1 – V+/V-	1
10	Spacer Brass M3 x 35	4	29	Cbl Power Supply 220V	1
11	Hex Nut Stl St A4 M4 UN-B 020	1	35	Earth Cbl Earthrail – Mounting Bracket	1
12	Crvd Spr Wash St Zn 4,1 UN-B 1011	1	36	Earth Cbl Earthrail – XI	1
13	Wash Br Ni 4,3 x 9 UN-B 050	1			

TABLE 6.2.1.9a

Power-One upgrade kit parts identification.

UPGRADE INSTRUCTIONS:

- Step 1:** From the PA2601/00 ITF2 Tape Loading Unit, remove the Mounting Bracket Assembly as described in chapter 6.2.1.1.
- Step 2:** From the PA2601/00 mounting plate assembly, remove the items indicated in Figure 6.2.1.9b:
- Item 2: Battery Pack
 - Item 3: Battery Pack Bracket + Screws
 - Item 4: Loader PCB
 - Item 29: Cable CON2 to Battery Pack

Replacement Instructions: PA2601/00

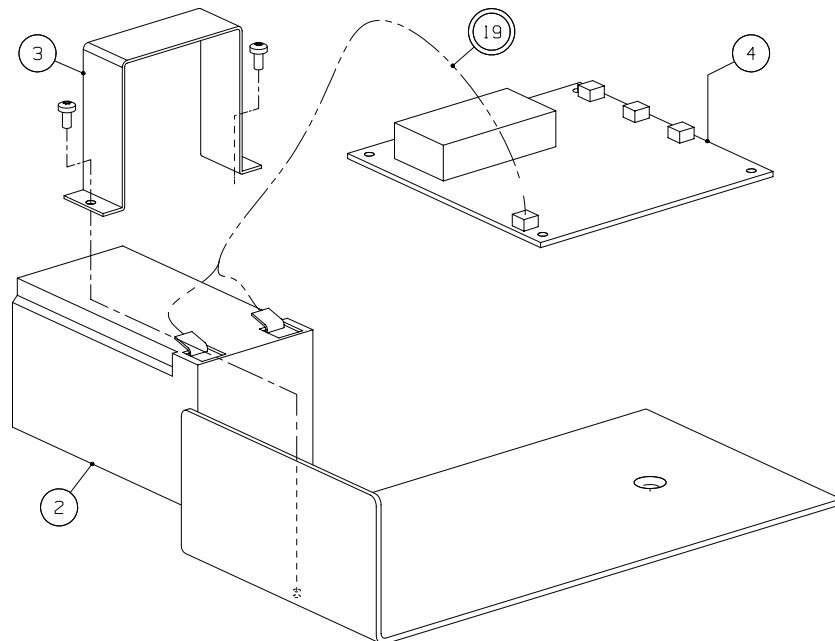


TABLE 6.2.1.9b

Transferred parts from old power supply to new power supply

Step 3: Assemble the items, from step 2, onto the Power-One upgrade kit on the location as shown in figure 6.2.1.9c.

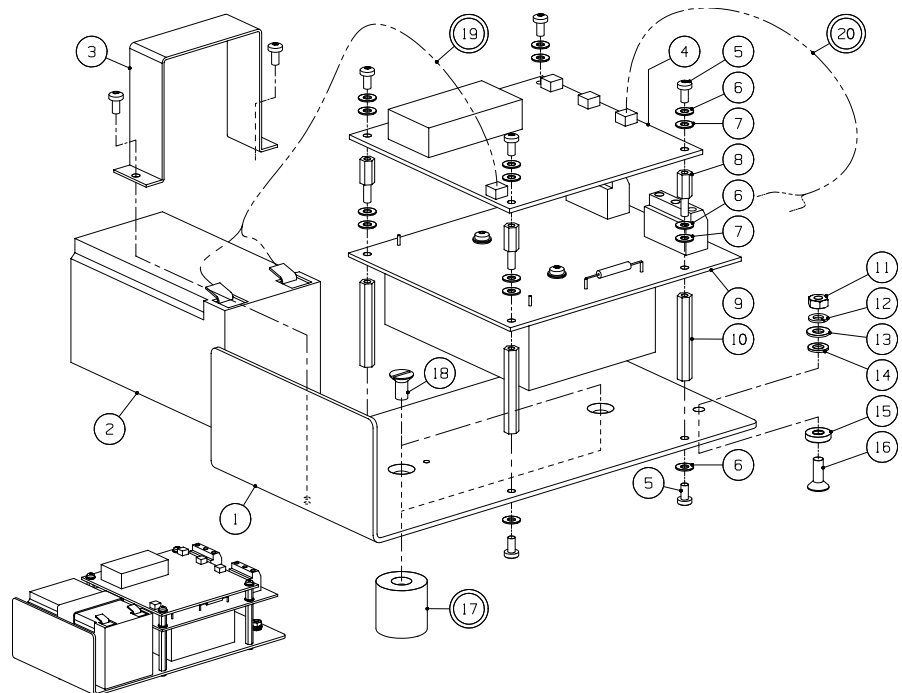


TABLE 6.2.1.9c

Assemble parts together (not all external cabling shown)

Step 4: Connect the following cables:

- [Figure 6.2.1.9c] Connect cable **20** from the V+ / V- (on the Power supply board) to connector **CON 1** of the Loader PCB (Brown: V+ to Pin1, White: V- to Pin 2)
- [Figure 6.2.1.9a] Connect cable **29** from the L / N (on the Power supply board) to the Mains Entry Filter on the backplate (Brown: L to L, Blue: L to P).
- [Figure 6.2.1.9a] Connect cable **35** from the mounting plate (connect cable **35** between items **13** and **14**) to the earthrail on the back plate (any vacant position).
- [Figure 6.2.1.9a] Connect cable **36** from the GND (on the Power supply board) to the earthrail on the back plate (any vacant position).

Step 5: Tie-wrap the earth cables together for better insertion of the backplate.

Step 6: Mount the mounting plate assembly back into the cabinet in the reverse order of chapter 6.2.2.1.

Step 7: When using the new Power-One Power supply, the Net Filter Fuses must be upgraded from 1A to 2A. The fuses are not included in the upgrade kit and must be ordered separately (order number: 4822 070 32002). Refer to section 6.2.1.8.

6.2.2 Replacement Instructions: PA2601/01

The replacement procedures of the PA2601/01 ITF2 Tape Loading Unit will refer to the item numbers as shown in figure 6.2.2.

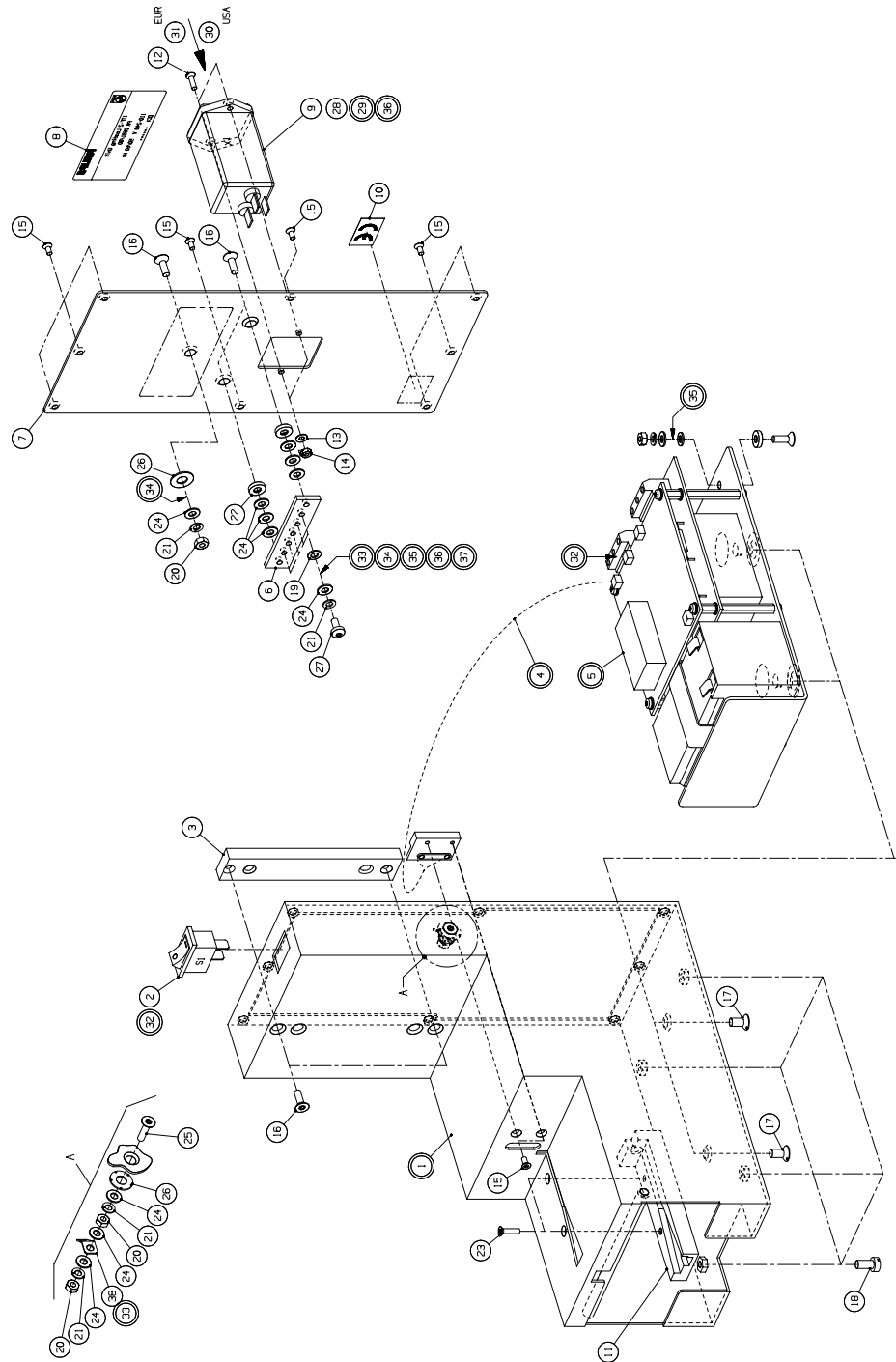


FIGURE 6.2.2

Layout ITF2 Tape Loading Unit PA2601/01.

6.2.2.1 Replacement: Mounting Bracket Assembly (Item 5)

Removing the mounting bracket is required for replacement of most parts that reside on the mounting bracket. It will also make other items in the housing more accessible.

Step 1: Lay the Tape Loading Unit on its side and from the bottom of the unit, remove the two Torx Screws M5 x 10 (items 17)

Put screws aside and do not loose screws.



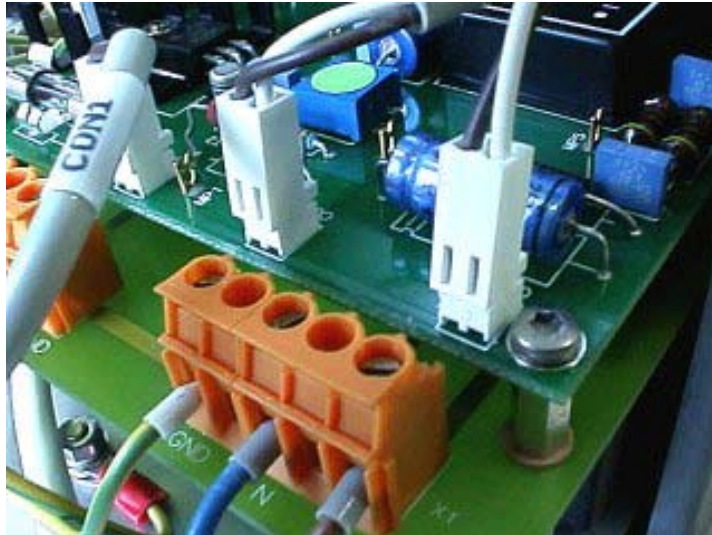
Step 2: Place the Tape Loading Unit straight-up again and remove from the rear side the 8 Torx Screws M3 x 6 (items 20). Remove the back plate (item 2) carefully as there are cables attached to it.

Put screws aside and do not loose screws.

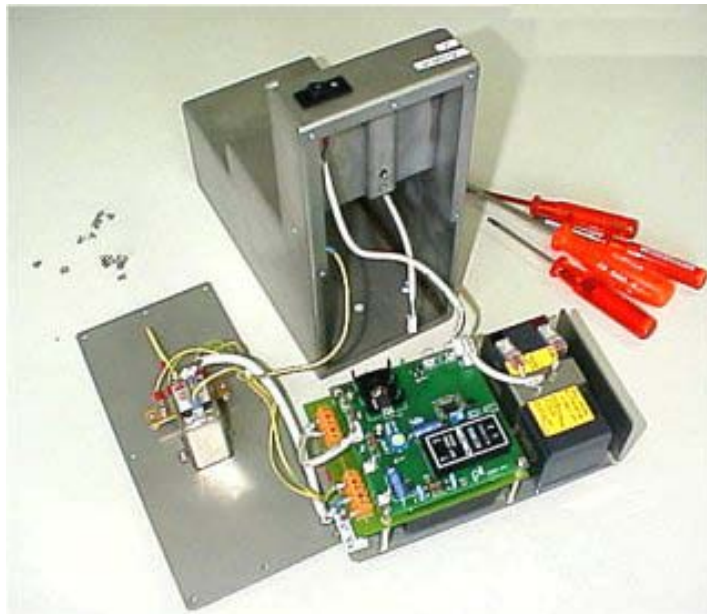


Replacement Instructions: PA2601/01

Step 3: At the front of the PCB, remove the two cables named CON3 and CON5.



Step 4: Slide the unit out of the cabinet.



6.2.2.2 Replacement: Power Switch (Item 2)

- Step 1:** Remove the back plate from the Tape Loading Unit as described in chapter 6.2.2.1. (The mounting bracket does not necessarily have to be removed).
- Step 2:** Remove at the bottom of the switch the two wires (CON 3 cable). Place the cable aside and do not loose cable.
- Step 3:** Press the two clips at the side of the switch housing and remove the complete switch housing from the top of the cabinet.

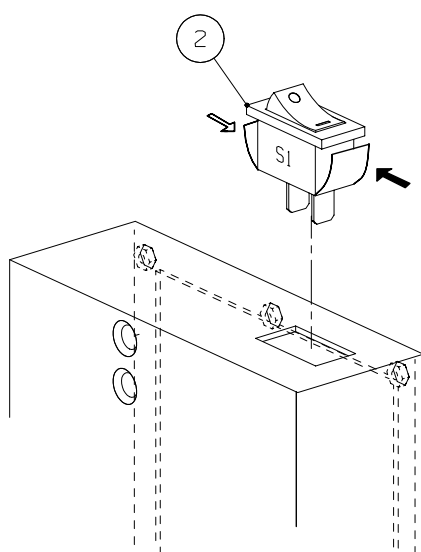


FIGURE 6.2.2.2

Replacement of the power switch

- Step 4:** Assemble the power switch housing in reverse order of step 1 to 3.

6.2.2.3 Replacement: Net Filter Fuses (Part of Item 9)

- Step 1:** Remove mains cable and switch off the Tape Loading Unit.
- Step 2:** Pull out the fuse holder at the rear side of the Tape Loading Unit (the unit does not need to be opened).
- Step 3:** Replace any of the defective Fuses (part numbers can be found in the spare parts listings).
Both Fuses: Slow T 2A, 250V

Replacement Instructions: PA2601/01

Step 4: Close fuse holder.



FIGURE 6.2.2.3

Replacement: Net filter Fuses (Mains)

6.2.2.4 Replacement: Battery Pack (Item 5-2)

Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.2.1. (The mounting bracket does not necessarily have to be removed).

Step 2: On the battery pack, disconnect the wires from the '+' and '-' pins.

Step 3: Loosen (**do not remove**) the 2 torx screw (items 5) of the battery bracket. The screws are only loosened as adding the screws (because of tight space) might give difficulties.

Step 4: Slide the battery pack from underneath its bracket.

Step 5: Add the new battery pack in reverse order of steps 1 to 4.

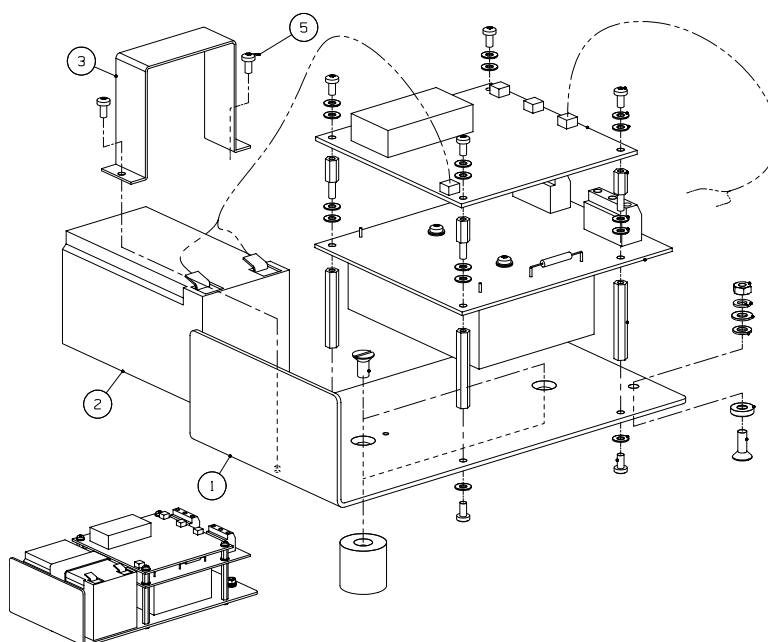


FIGURE 6.2.2.4

Replacement: Battery Pack (Item 5-2)

6.2.2.5 Replacement: Loader PCB (Item 5-4)

- Step 1:** Remove the back plate from the Tape Loading Unit as described in chapter 6.2.2.1. (The mounting bracket does not necessarily have to be removed).
- Step 2:** Disconnect from the Loader PCB the connectors CON1 (Item 20) and CON2 (Item 19)
- Step 3:** Remove the four torx screws (items 5) that hold the Loader PCB to the pillars on the Power Supply PCB. It might be that the pillars (9) rotate along. In this case, use a small wrench (5mm) to prevent pillars from rotating.
- Do not loose the O-Rings and Isolation O-rings.

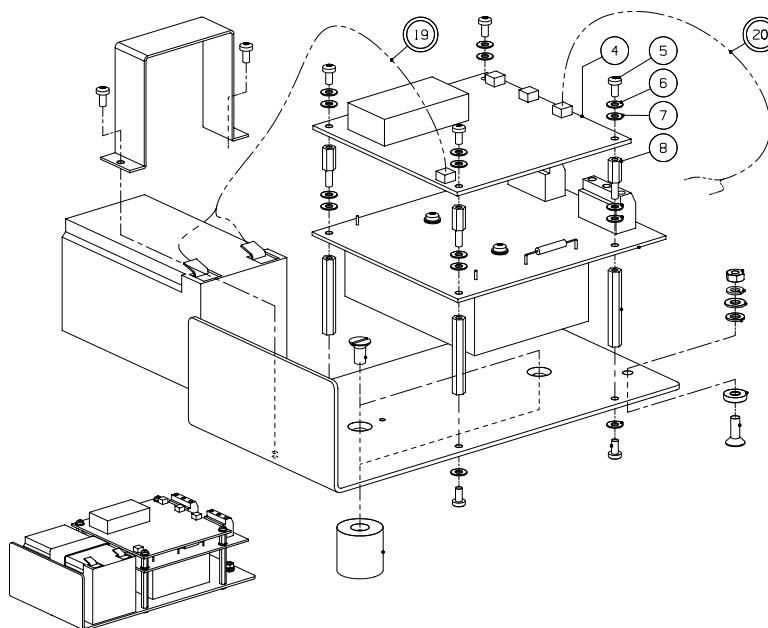


FIGURE 6.2.2.5

Replacement: Loader PCB (Item 5-4)

Step 4: Assembling is done in reverse order of step 1 to 3.

Step 5: The Loader PCB might require **14.3V Adjustment**. Please refer to the adjustment procedures in Chapter 7.

6.2.2.6 Replacement: Loader PCB Fuses (Part of Items 4)

Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.2.1. (The mounting bracket does not necessarily have to be removed).

Step 2: Replace the Fuses (F1) or (F2) of which the location is shown in figure 6.2.2.6.

Fuse F1: When blown, the unit does not function when the mains is connected.

Fuse F2: When blown, power from the battery (and charging of the battery) is disabled.

Fuse F1 and F2: Slow T 1A, 250V

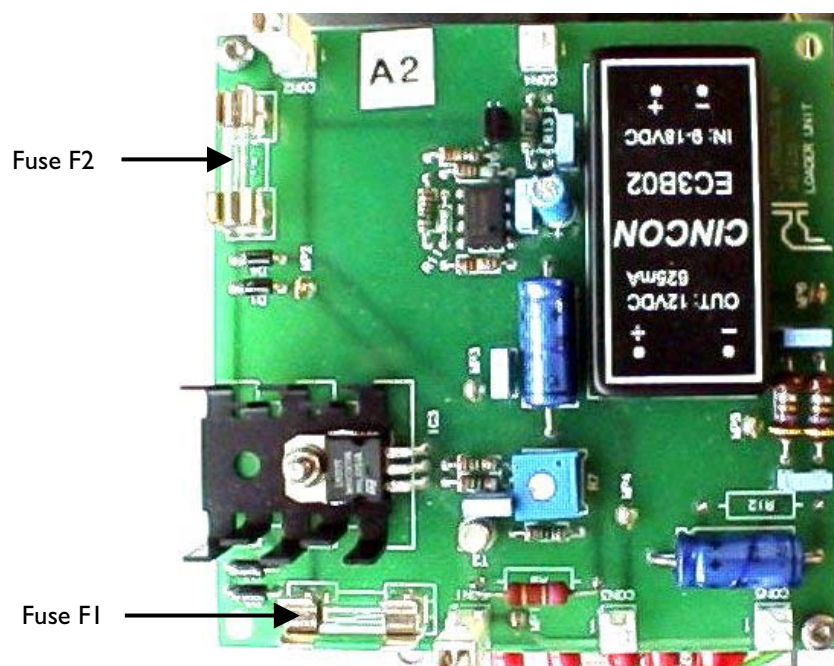


FIGURE 6.2.2.6

Replacement: Loader PCB fuses.

6.2.2.7 Replacement: Power Supply (Item 5-9)

- Step 1: Remove the back plate from the Tape Loading Unit as described in chapter 6.2.2.1. (The mounting bracket does not necessarily have to be removed).
- Step 2: Remove the Loader PCB from the power supply as described in chapter 6.2.2.5. Do not loose screws, o-rings and isolation rings.
- Step 3: Disconnect all wires connected on the Power Supply PCB (V+, V-, GND, L and N).

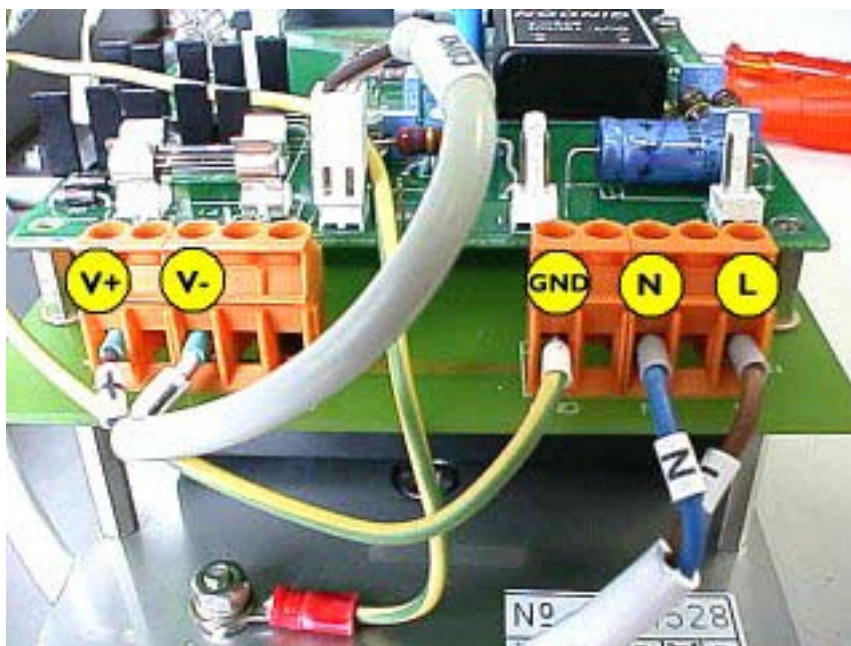


FIGURE 6.2.2.7a

Disconnect wiring from the power supply PCB.

Step 4: Turn the mounting bracket upside down and remove from the bottom the four torx screws (items 5) that secure the power supply PCB to mounting bracket. Set screws aside, do not loose.

The PCB, including pillars (items 10 and 8) is now loose.

Step 5: Remove from the Power Supply PCB the eight pillars, four long ones (items 10) and four short ones (items 8). Do not loose the O-Rings isolating O-rings (items 6 and 7).

Step 6: The power supply is a complete assembly: SMD Power Supply Melcher + PCB + Connectors. This complete unit will be replaced (item 9).

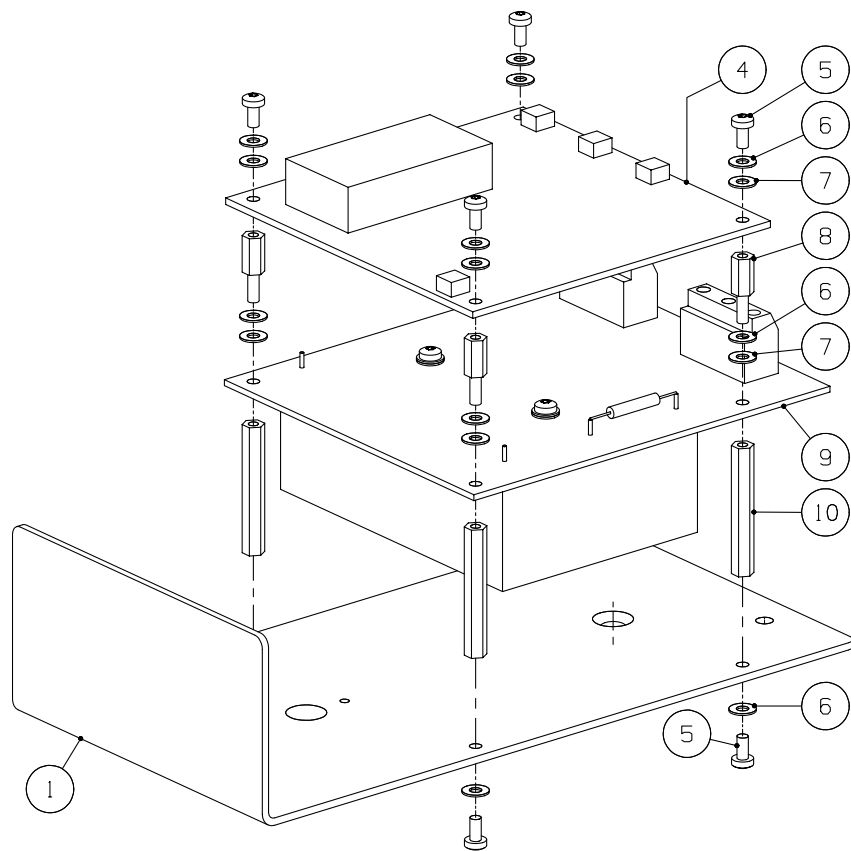


FIGURE 6.2.2.7b

Replacement: Power supply unit.

Step 7: Assembling is performed in reverse order of step 1 to 6.

6.2.2.8 Replacement: Component Cover

Step 1: Remove the back plate and Loader unit according Chapter 6.2.1.3.

Step 2: Insert the cover block (Item 11) in the direction as shown in figure 1 and place it at the indicated location.

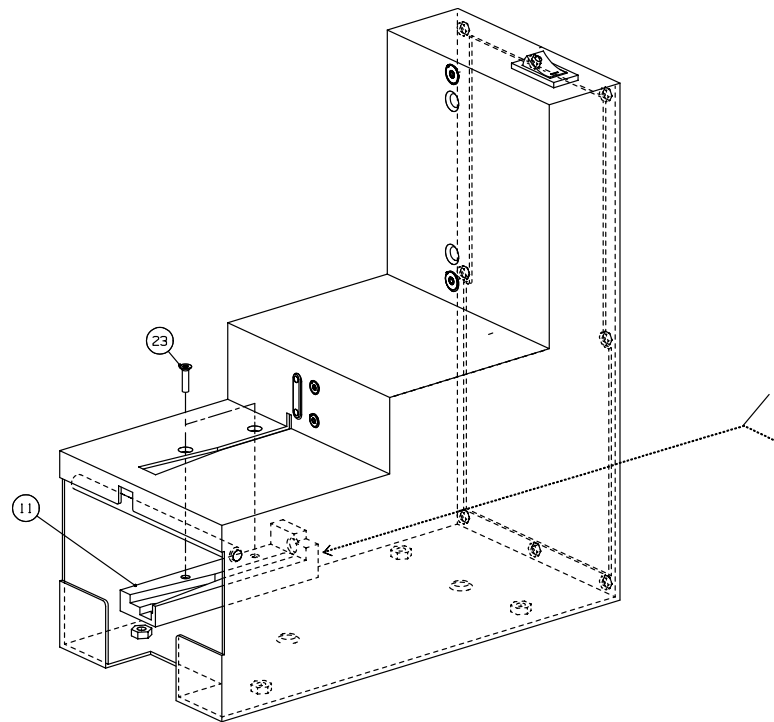


FIGURE 6.2.2.8

Replacement: Power supply unit.

- Step 3:** Secure the cover block by means of the two M3x10 screws (items 29).
- Step 4:** Assemble the loader unit+power supply, cabling and back plate as described in chapter 6.2.1.3.

CHAPTER 7 Measuring and Adjusting Data

7.1 Spare Parts

Before delivery, all spare parts that require adjustments are adjusted and measured. Therefore, ordered material requires no additional adjustment. The two parts where adjustment is applicable are the power supply (PA2601/00 only) and the loader unit PCB. If one of these parts will be replaced separately, the loader unit PCB and power supply need adjustment together. The adjustment can be found in this section.

7.2 List of Tools

Table 7.2 gives recommended list of tools and materials for adjusting of the Tape Loading Unit. All tools can be obtained locally.

Recommended tools and materials	
■	Earthen wrist wrap (to prevent ESD damage)
■	Digital multi-range instrument (with at least Volts and Current modes DC and AC)
■	Resistor 27 Ohm, 7 Watt (dummy load)

TABLE 7.2

List of tools and materials

7.3 Adjustments**7.3.1 Adjustment: PA2601/00 Tape Loading Unit.**

NOTE: During this adjustment, the battery must be disconnected from the PCB (CON2) and no load connected to the loading unit (no feeder attached).

Step 1: Connect a multi-range instrument between the measure point MP1 (‘-’ probe) and fuse F1 (‘+’ probe, any side will do).

Step 2: Measure voltage:
If voltage is 16.3 VDC (± 0.3 VDC) continue with Step 4.
If voltage is not 16.3VDC (± 0.3 VDC) continue with next step.

Step 3: Adjust slowly on the power supply varistor R18 until the voltage between the measure point MP1 and F1 become 16.3VDC (± 0.3 VDC). See figure 7.3.1a



NOTE: Do not continue if the voltage cannot be adjusted correctly. The Loader PCB or Power Supply is defective. Replace one of these units first.

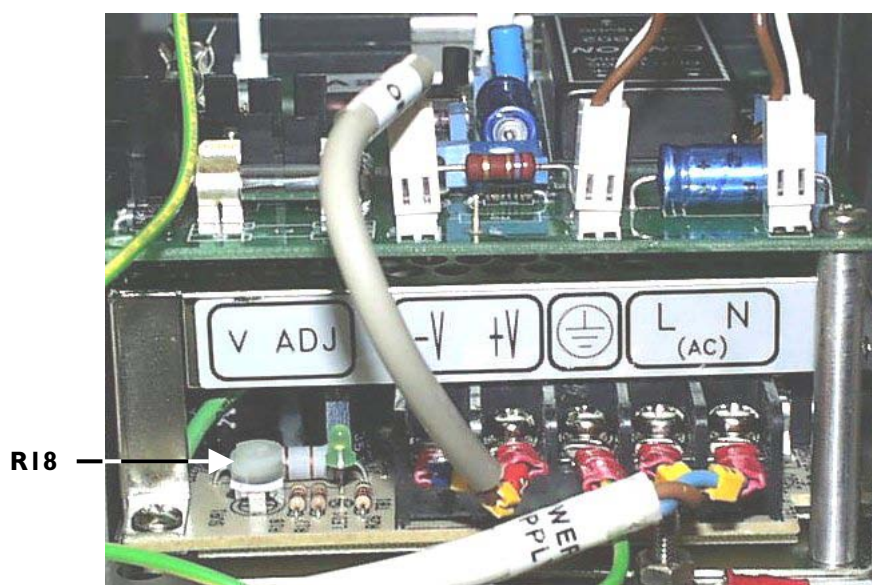


FIGURE 7.3.1a

16.3V Adjustment at F1 by adjusting R18 on Power Supply

- Step 4:** Connect a multi-range instrument between the measure points MP1 ('- probe) and MP2 ('+' probe).
- Step 5:** Connect the mains power to CON1 (switch unit ON).
- Step 6:** Measure voltage:
If voltage is 14.3 ± 0.1 VDC continue with Step 7
If voltage is not 14.3 ± 0.1 VDC continue with next step.
- Step 7:** Adjust slowly on the loader unit varistor R7 until the voltage between the measure points MP2 and MP3 become 14.3 ± 0.1 VDC. See figure 7.3.1b

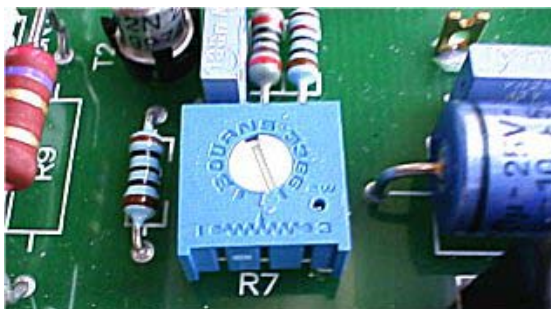


FIGURE 7.3.1b

I4.3V Adjustment over MP2 and MP2 by adjusting R7 on Loader PCB

Checking Output Voltage with dummy load:

When the unit is disassembled, the cables are usually too short to connect in order to test with a feeder. In this case a dummy load will do.

Step 8: Disconnect the mains power

Step 9: Connect a dummy load of 27 Ohm-7Watt to CON5 (connect both pins via the resistor).

Step 10: Connect a multi-range instrument between MP5 ('+' probe) and MP6 ('-' probe).

Step 11: Create a connection between the pins of CON3 (power switch)

Step 12: Connect the mains to the unit.



WARNING

Resistor will get HOT

Step 13: Measure voltage:

If voltage is 12 VDC ($\pm 2\%$): Unit OK

If voltage is not 12 VDC ($\pm 2\%$): Unit BAD. Replace unit.

Step 14: Disconnect the mains from the Unit, remove dummy resistor and assemble unit.

7.3.2 Adjustment: PA2601/01 Tape Loading Unit.

- Step 1:** Connect a multi-range instrument between the measure points MP2 ('- probe) and MP3 ('+' probe).
- Step 2:** Measure voltage:
If voltage is 14.3 ± 0.1 VDC continue with Step 4
If voltage is not 14.3 ± 0.1 VDC continue with next step.
- Step 3:** Adjust slowly on the loader unit varistor R7 until the voltage between the measure points MP2 and MP3 become 14.3 ± 0.1 VDC. See figure 7.3.2

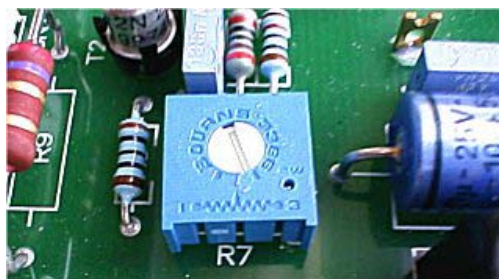


FIGURE 7.3.2

14.3V Adjustment over MP2 and MP3 by adjusting R7 on Loader PCB

Checking Output Voltage with dummy load:

- Step 4:** Disconnect the mains power
- Step 5:** Connect a dummy load of 27 Ohm – 7W to CON5 (connect both pins via the resistor).
- Step 6:** Connect a multi-range instrument between MP5 ('+' probe) and MP6 ('-' probe).
- Step 7:** Create a connection between the pins of CON3 (power switch)

Measuring and Adjusting Data

Step 8: Connect the mains to the unit.



WARNING

Resistor will get **HOT**

Step 9: Measure voltage:

If voltage is 12 VDC \pm 2%: Unit OK

If voltage is not 12 VDC \pm 2%: Unit BAD. Replace unit.

Step 10: Disconnect the mains from the Unit, remove dummy resistor and assemble unit.

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CHAPTER 8 Spare Parts List

8.1 Repair

The tape loading unit is a local repairable unit only. Parts needed for local repair can be ordered and are identified in the spare parts list. Parts, not mentioned in this list, can be obtained on special request.

The lifetime of the loading unit is 150.000 feeder exchanges or 5 years whatever comes first with a service level of approximately 6.5% (valid for PA2601/01 only).

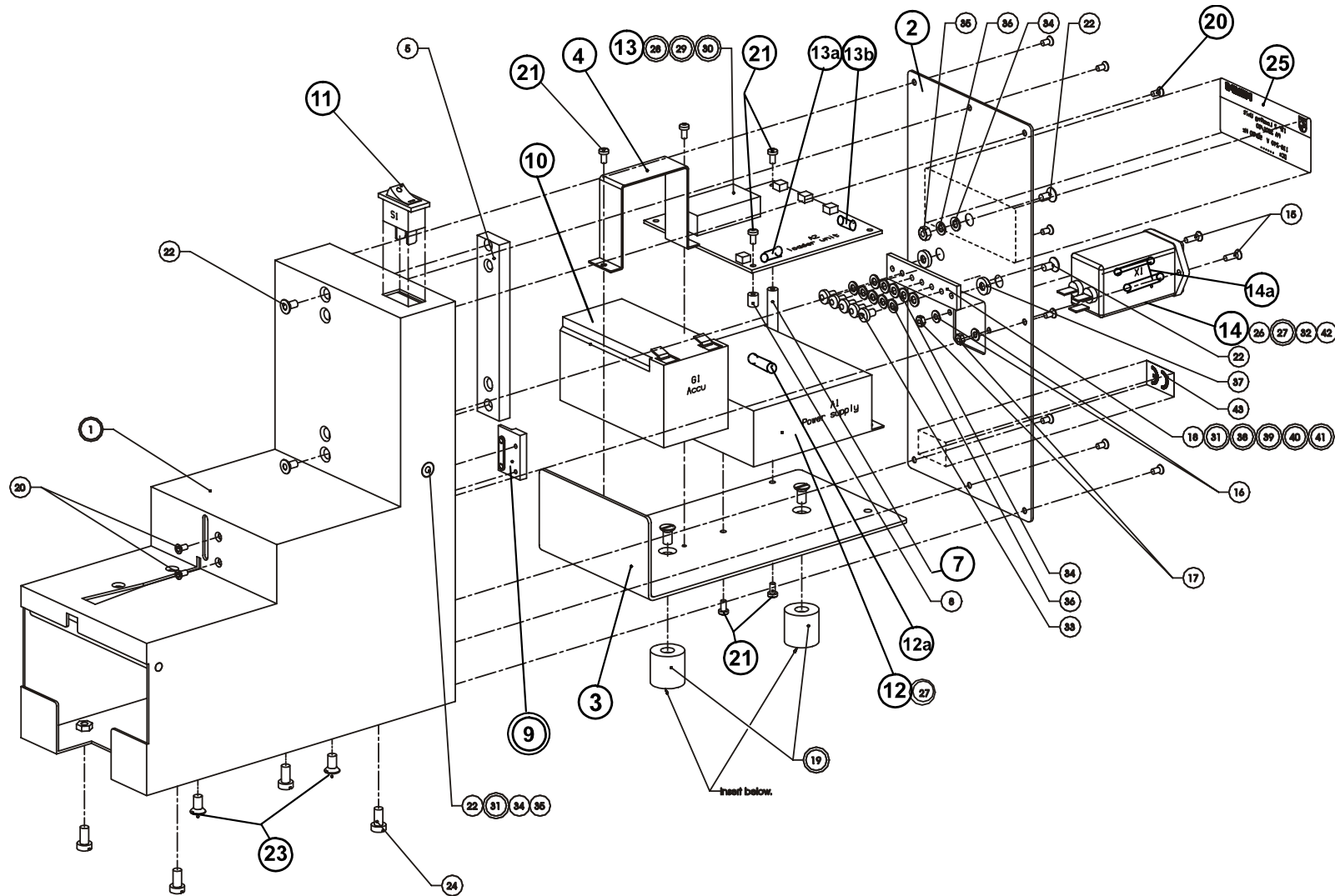
8.2 Spare Parts

Before delivery, all spare parts that require adjustments are adjusted and measured, therefore ordered material requires no additional adjustment. The two parts where adjustment is applicable are the power supply (for the PA2601/00 Tape loading unit only) and the loader unit PCB. The power supply needs adjustment first. For adjustment and check, refer to Chapter 7.

8.3 Spare Parts Lists

The fields in the spare parts list have the following meaning:

Item No.....	Position Identification.
Part of Item No.....	Module the part belongs to.
Ordering Code.....	the order code at Philips. t.b.d. = To be defined. Code number not yet available.
Description.....	Description of the article.
Qty/Mod.....	The quantity of the part in one module.
PI	If 'Y', the part must be stocked regionally.
Serv. Instr.....	If 'Y', a service instruction, maintenance or replacement instruction is available.
Remarks	1. Comment or specific information. 2. 'Per Order Article', article with long lead-time. 3. Standard Packing Unit: Minimum packing quantity.



Item No.	Part of. Item No.	Ordering Code	Description	Qty/Mod	PI	Repair	Serv. Instr.	Remarks
10	01	5322 138 10718	Battery Pack	1			Y	Hitachi HPI.2-12, (12M1.2), 12V, 1.2Ah
11	01	5322 276 14008	Power switch	1			Y	MSR 5
12	01	5322 218 11941	Power supply	1			Y	MW S-25-15 ADJUSTMENT REQUIRED
12a	01	4822 070 13152	Fuse, Power supply	1			Y	250V F3.15A
13	01	5322 216 04618	Loader unit PCB	1			Y	ADJUSTMENT REQUIRED
13a	01	4822 070 31002	Fuse 1, loader unit	1			Y	250V T1A
13b	01	4822 070 31002	Fuse 2, loader unit	1			Y	250V T1A
14a	01	4822 070 31002	Fuse, Mains (for Mean Well PSU)	2			Y	250V T1A
		4822 070 32002	Fuse, Mains (for Power-One PSU)	2			Y	250V T2A. Use when Power-One PSU is used.

This Tape Loading Unit PA2601/00 (First Generation) is out of production since September 1, 1999. The PA2601/01 is its successor.

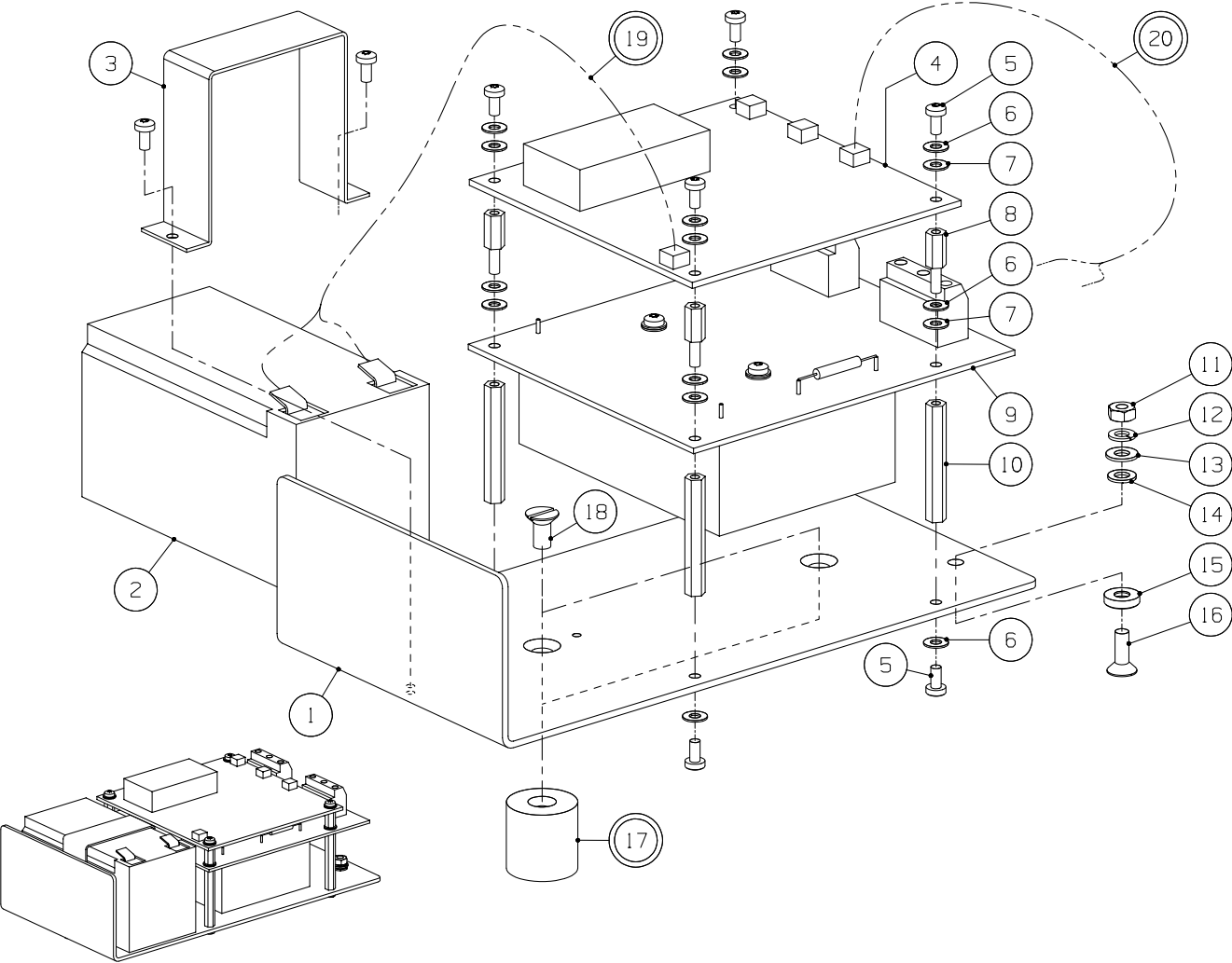
Item 12: During time it can occur that the current Power Supply will become obsolete. In this case, when ordering this number, the Long-Life Power supply upgrade kit, as in the PA2601/01, will be delivered instead (see notes on next page).

Item No.	Part of. Item No.	Ordering Code	Description	Qty/Mod	PI	Repair	Serv. Instr.	Remarks
-	01	9466 026 01011	Tape Loading Unit Complete	1				Equivalent to PA2601/01
2	01	5322 276 14008	Power switch				Y	MSR 5
5	01	4022 591 18330	Mounting Bracket Assembly					See Note *
11	01	5322 442 01894	Component Cover Block	1				
12	01	5322 502 21 348	Csk Screw Stl St A4 M3x10	2				
13	01	5322 532 12126	Washer Stl St A4 3,2x7	2				
14	01	5322 505 10711	Hex Nut x Stl St A4 M3	2				
15	01	5322 502 14498	Csk Screw Stl St M3x6	10				
18	01	5322 502 13973	Ch Screw Stl St M5 x 10	4				
19	01	5322 532 14174	Earthwasher St Cu Ni 4,3 x 8	5				
20	01	5322 505 10511	Hex Nut x Stl St A4 M4	3				
21	01	4822 530 80163	Curved Spring Wahser StZn 4,1	8				
22	01	5322 532 12278	Csk Washer Stl St A4 4,5	2				
25	01	5322 502 14407	Csk Screw Stl St M4 x 16	1				
28	01	4822 070 32002	Fuse, Mains	2			Y	250V T 2A
31	01	4822 321 11033	Cord Set 3 x 0,75mm ² Grey					



NOTE: 1. For individual parts, refer to next page.

2. The Mounting Bracket Assembly is also suitable for a power supply upgrade for the previous generation PA2601/00 ITF2 Tape Loading Units and is therefore shipped without items (see next page for item numbers): (2) Battery Pack, (3) Battery Bracket, (4) Loader Unit PCB and (19) Cable CON2. These items should be transferred from the old (or current) assembly to the newly purchased assembly.



Item No.	Part of. Item No.	Ordering Code	Description	Qty/Mod	PI	Repair	Serv. Instr.	Remarks
2	5	5322 138 10718	Battery Pack	1			Y	Hitachi HPI.2-I2, (12M1.2), 12V, 1.2Ah
9	5	4022 594 10210	Power supply + PCB	1			Y	
4	5	5322 216 04618	Loader unit PCB	1			Y	ADJUSTMENT REQUIRED
4a	5-4	4822 070 31002	Fuse 1, loader unit	1			Y	250V T 1A
4b	5-4	4822 070 31002	Fuse 2, loader unit	1			Y	250V T 1A
5	5	5322 502 14403	Pan Screw Stl St M3 x 6	8				
6	5	4822 532 12025	Washer Br Ni 3,2 x 7	12				
7	5	4822 532 50477	Washer Press B 3,2 x 7	7				
11	5	5322 505 10511	Hex Nut Stl St A4 M4	1				
12	5	4822 530 80163	Curved Spring Wahser St Zn 4,1	1				
14	5	5322 532 14174	Earth Washer St Cu N 14,3x8	1				
15	5	5322 532 12278	Csk Washer St A4 4,3 MFM	1				

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CHAPTER 9 Drawings and Diagrams

9.1 Diagrams

9.1.1 Tape Loading Unit (electrical diagram)

Figure 9.1.1 shows the electrical diagram of the Tape Loading Unit.

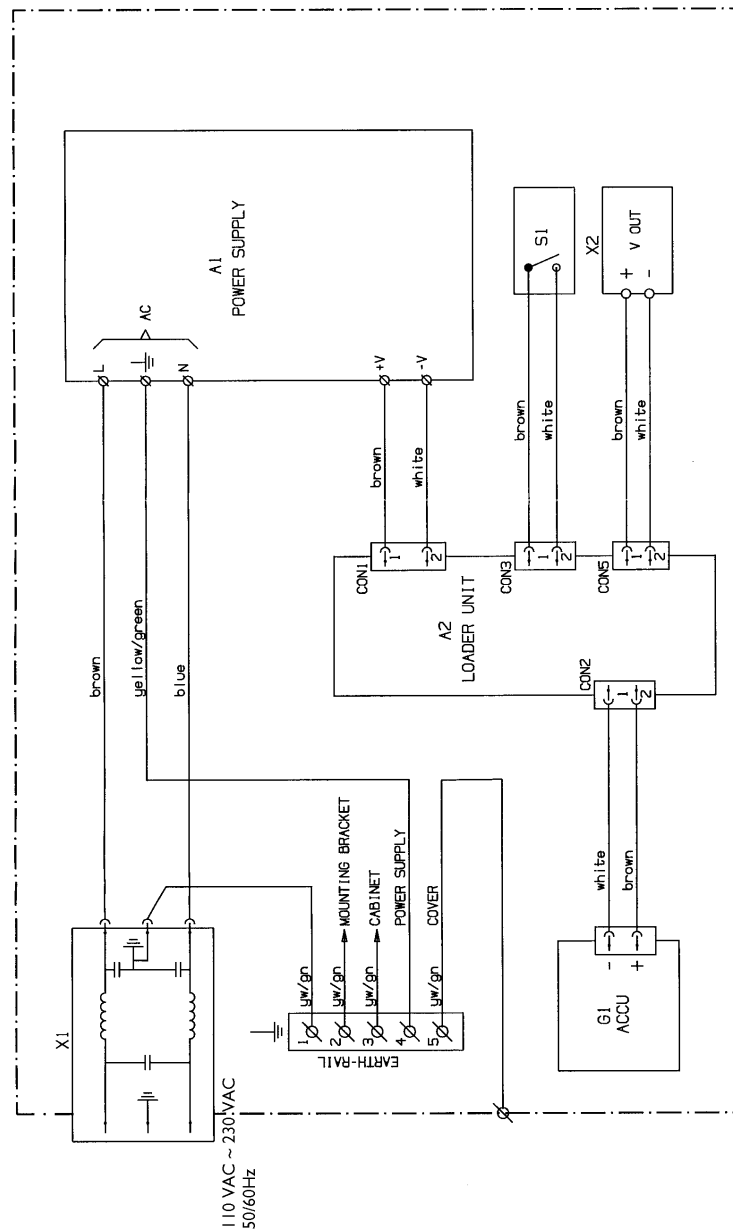


FIGURE 9.1.1

Tape Loader Unit, electrical diagram

9.1.2 Tape Loading Unit (electrical current diagram)

Figure 9.1.2 shows the electrical current diagram of the Tape Loading Unit.

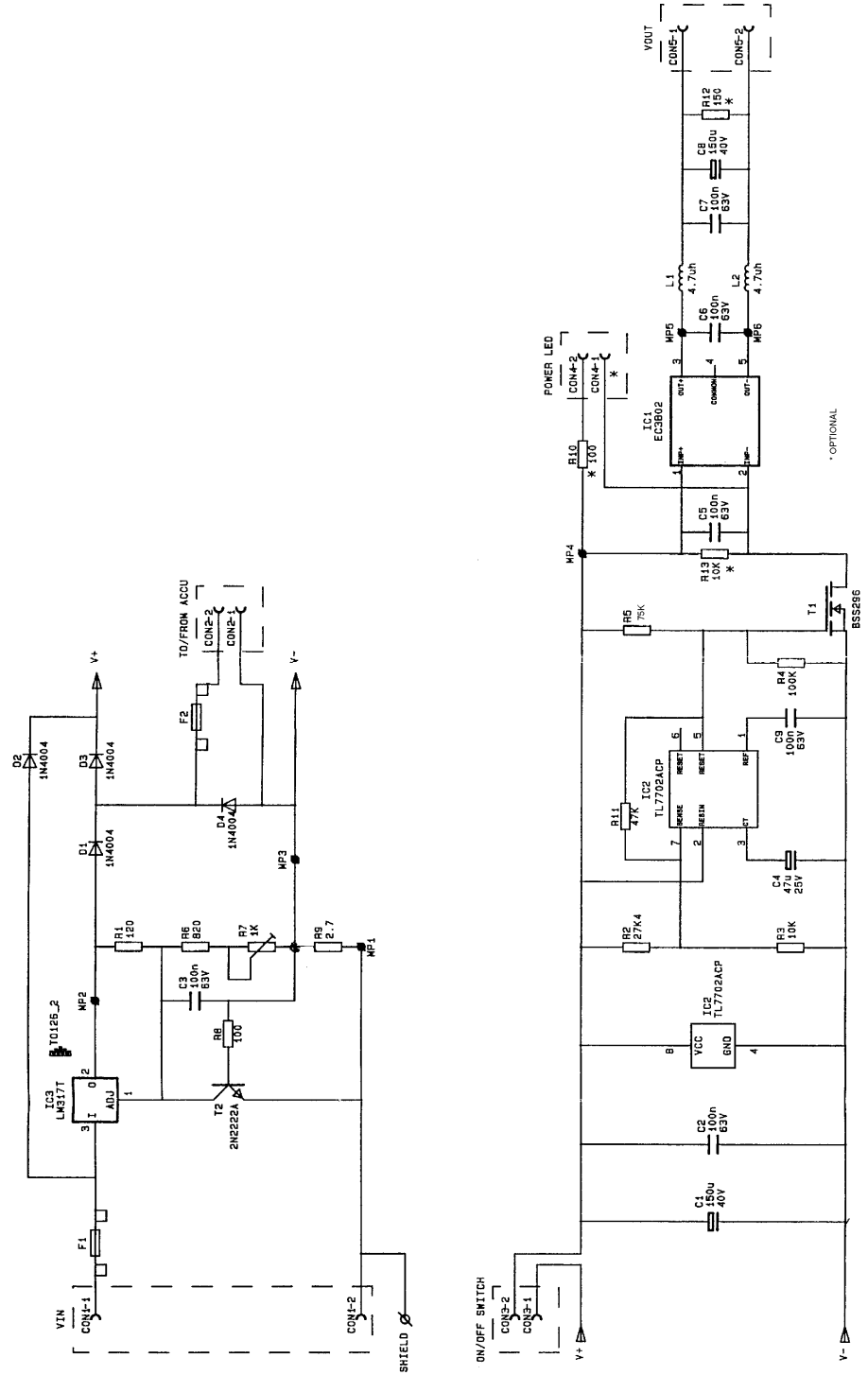


FIGURE 9.1.2

Tape Loader Unit, electrical current diagram

9.1.3 Loader Unit PCB

Figure 9.1.3 shows the layout of the top view of the loader unit PCB.

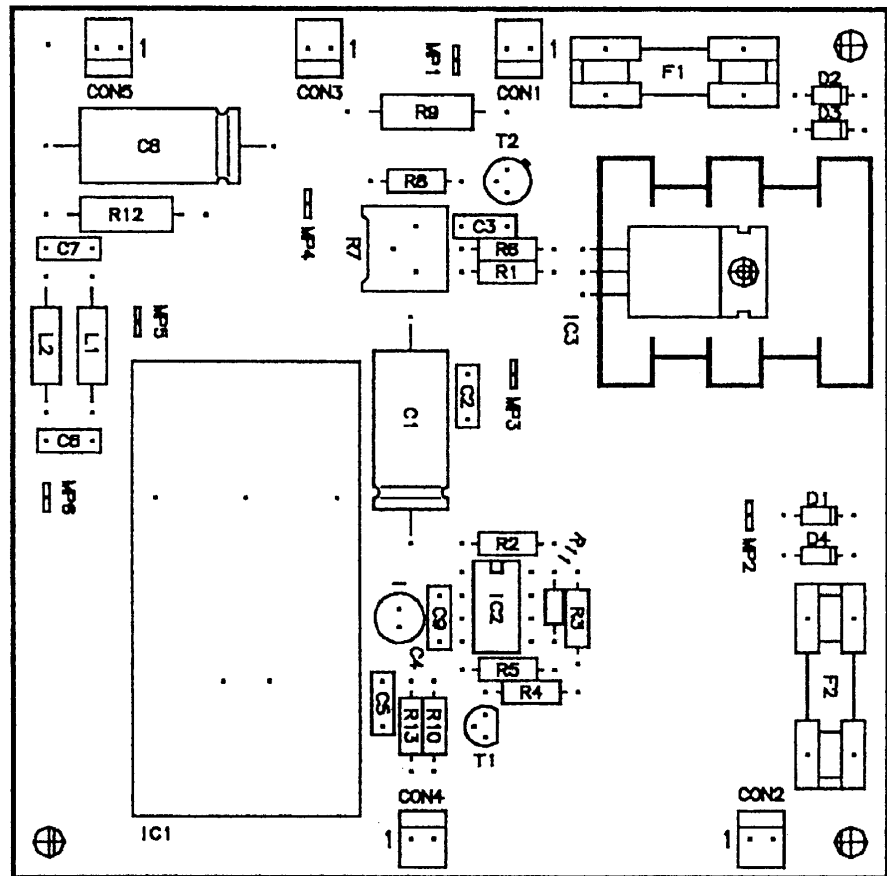


FIGURE 9.1.3

Loader Unit PCB, layout

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Feeder Storage Cart

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MANUAL TITLE	MANUAL NUMBER	SUPPLIED WITH PA NUMBER(S)
Feeder Storage Cart	4022 591 91541 (formerly part of 5322 871 61604 / 5322 871 61605)	PA 2602/00

MANUAL HISTORY					
ISSUE	DATE	ORDER NUMBER	REVISION CODE	STATUS	RELEASE DOCUMENT
First Issue	November 2004	4022 591 91541	04.01	Current	DI-FDR-012

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 CHAPTER 9 Not applicable		
INDEX I-I	Not applicable	

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CHAPTER I Introduction

I.1 General Introduction

The Storage Cart can handle all feeders with an Intelligent feeder interface and has:

- □ Maximum feeder storage capabilities: 50 feeders.
- □ There are 2 storage places, front and rear side, for reels. Maximum storage 108 reels of 15”.
- □ Provisions for adding the PA2601/00 Tape Loading Unit.
- □ Additional storage space.

The Storage Cart is delivered in a box, unassembled. Assembling must be done locally according illustrated instructions, (which is delivered in the box).



NOTE: Do not move the Storage Cart when the castors are blocked. Moving the Cart can result in rubber streaks on the floor.

I.2 Overview

Figure 1.2 gives an overview of the Storage Cart terminology.

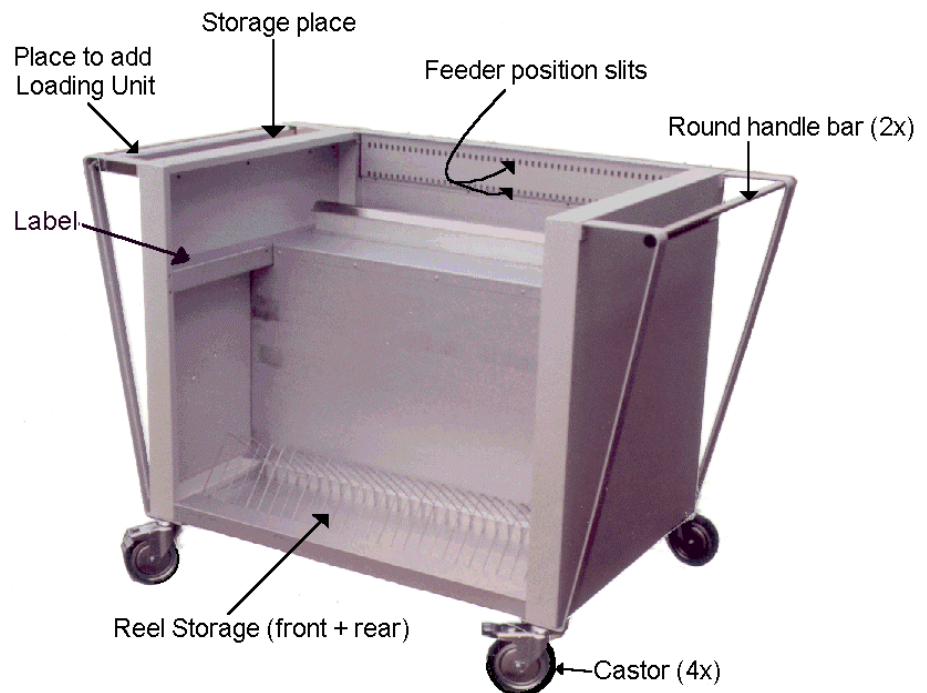


Figure 1.2

Feeder Storage Cart

Introduction

All feeder storage carts produced have been tested and are provided with an official label as shown in Figure 1.3. For location of the label, refer to Figure 1.2



NOTE: Do not remove the label. Labeling is used for warranty and configuration control. Use this number for all correspondence.

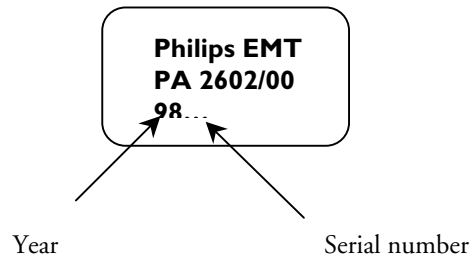


FIGURE 1.3

Identification label

CHAPTER 8 Spare Parts Lists

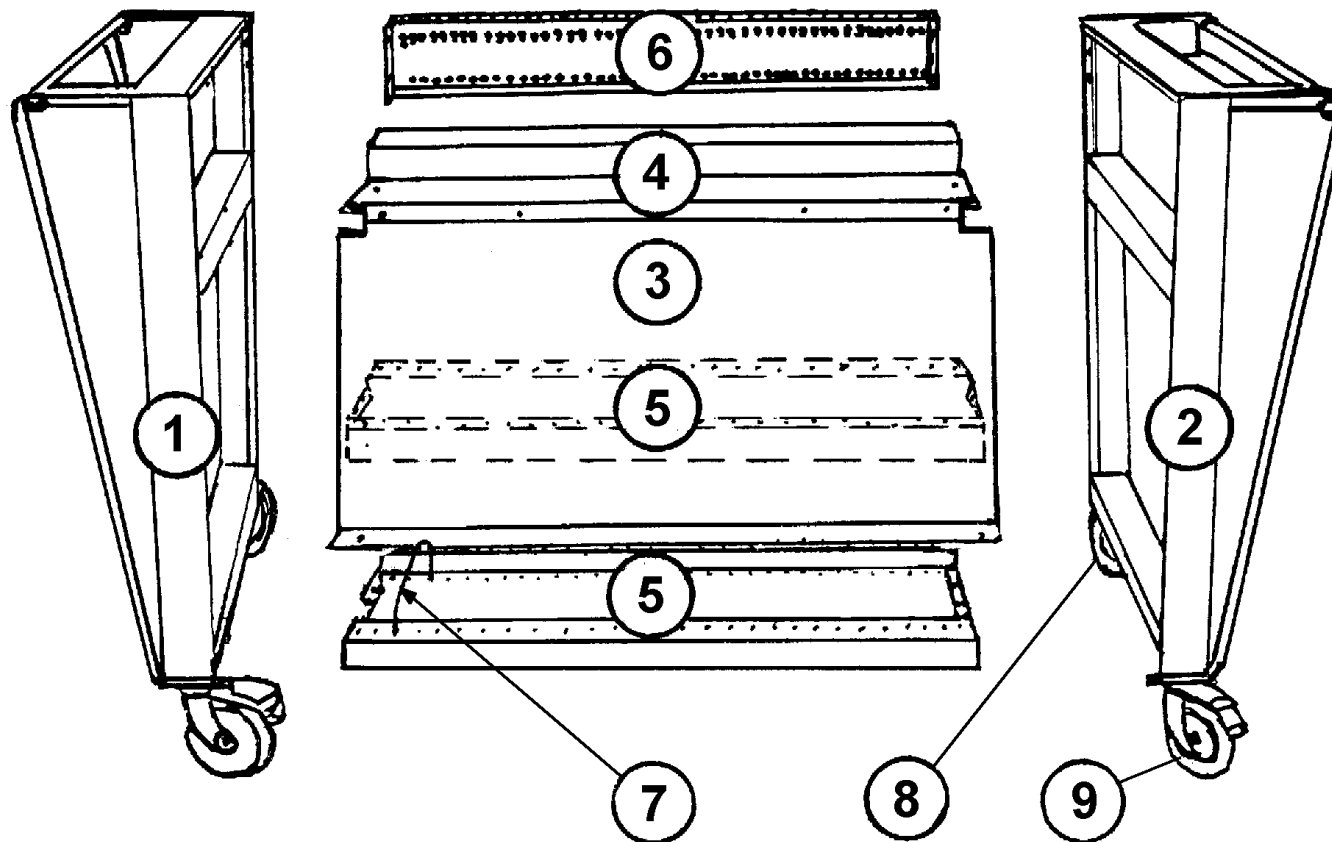
8.1 Repair

The feeder storage cart is not a repairable unit. Separate parts are not available. In case of an incidental need of a part, a request for spare can be submitted. Identification for the required part can be done via identification drawing as given in section 8.2.

The lifetime of the storage cart is 1000 feeder exchanges per feeder position or 5 years whatever comes first.

8.2 Spare Parts List

The Feeder Storage Cart can only be ordered via the normal commercial channels. Order Number for the complete storage cart is PA2602/00.



If a part is required, please identify the part on this page and send it via your regular channel to Philips.



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ITF2 Repair Tool

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MANUAL TITLE	MANUAL NUMBER	SUPPLIED WITH PA NUMBER(S)
ITF2 Repair Tool	4022 591 91551 (formerly part of 5322 871 61604)	PA 2849/30

MANUAL HISTORY					
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PA 2849/30: ITF2 Repair Tool

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An electronic format of this document is also available and can be ordered separately.
The files are delivered in the Portable Document Format (*.PDF).

System Requirements:

- 80486DX or higher
- Adobe Acrobat Reader v3.0 or Higher (Freeware)

Windows 3.11 or higher¹

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Adobe Acrobat is a registered trademark of the Adobe Systems Incorporated.

Windows 3.11 is a registered trademark of the Microsoft Cooperation.

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CHAPTER I Introduction

I.1 Safety

I.1.1 General

For the correct and safe use of the repair tool, service **personnel** should follow generally accepted safety procedures. In addition, they must comply with the safety precautions as specified in this manual.

Where necessary, special warning and caution statements are used throughout this manual. These statements will be explained in this chapter.

Moreover, all warning and caution statements present on any sticker on the ITF2 repair tool is explained in this chapter.

I.1.2 Personnel Qualification

Operation, adjustment, maintenance and repair of the ITF2 repair tool may only be carried out by **trained and qualified personnel** who are aware of the hazards involved.

The following training level is defined:

Maintenance or Service level	Official Philips training course at one of the official Philips Training Centers
------------------------------	--

I.1.3 Caution and Warning Statements



WARNING

GIVES INFORMATION OF UTMOST IMPORTANCE IN ENSURING THE SAFETY OF THE MOUNTER OPERATOR, INSPECTOR, OR SERVICE PERSONNEL.



CAUTION

GIVES IMPORTANT INFORMATION TO PREVENT ANY DAMAGE TO THE MOUNTER OR DATA.

I.1.4 Safety Standards

The safety of the ITF2 repair tool is in accordance with the following relevant standards:

- CE
- SEMI S2-0200, S8-0600
- CSA/UL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to both parts 15 of the FCC rules and the radio interference regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interface at his own expense.

I.1.5 Caution and Warning Stickers on the ITF2 Repair Tool



Pictogram	Category	Meaning
	WARNING	Danger. High voltage!
	CAUTION	Electrostatic sensitive devices. Observe precautions for handling.

TABLE I-I

Stickers overview

I.1.6 Electrical Safety

When working on the ITF2 repair tool electrical system, always first switch off the 12VDC (DUT-power) button and remove the power cable at the back of the tool.

The wiring colours are in accordance with the following relevant standard:

- IEC 60204-1

1.1.7 ESD Precautionary Measures

- Any person handling an ITF2 Repair Tool and/or tape feeder printed circuit boards must adequately be earthed – e.g. by means of the bracelet with earth cable – to prevent destructive electrostatic discharge through the printed circuit board.
- All printed circuit boards must be transported and stored in ESD-protected bags.
- Handling of ITF2 Repair Tool and/or tape feeder printed circuit boards should be restricted as much as possible.

1.2 General Introduction

This manual is intended to be a guideline for operating, handling and corrective repair by end-user repair shop, which own feeders.

The ITF2 repair tool is for repair of the intelligent tape feeder (ITF2) only.

It cannot be used for other feeder types.

The main benefit for the end-user is that with this tool he will be able to repair up to 97% of all possible parts of the ITF2 feeder and the ability to adjust the sensors of the ITF2 after repair.

The ITF2 repair tool is required to adjust the sensor intensity. This is necessary for any replacement or upgrade that has taken place in the following area:

- Sensor replacement
- Side plate replacement
- All replacements of parts underneath the side plate
- Upgrade of parts that will influence the position of the sensors
- Recovery of production errors in sensor adjustments which are discovered in the field

Furthermore the following feeder functionalities are added to the tool and can be seen via PC screen:

- Feeder serial number
- Feeder index count read
- Feeder functionality check:
 - Sensor check
 - Back/forward button
 - Human interface LED's
 - Topfoil motor control back/forward
 - Index motor control back/forward
 - Index switch settings check
 - Sprocket wheel position control
 - Interlock switch check
 - Select line and ready/busy signal
 - Quality of peel-off motor and index motor
 - Quality of mounting of the peel-off motor in combination with the main shaft and pivot press unit

After replacement of parts all information can be written to and stored in the PCB of the ITF2 feeder.

1.3 Contents of Packing Box

Figure 1-1 shows everything that you will find in the box. Also a short description is given of all parts. Contact immediately your RSC if parts are missing or damaged. The PC and monitor are not a part of the tool and have to be bought locally.

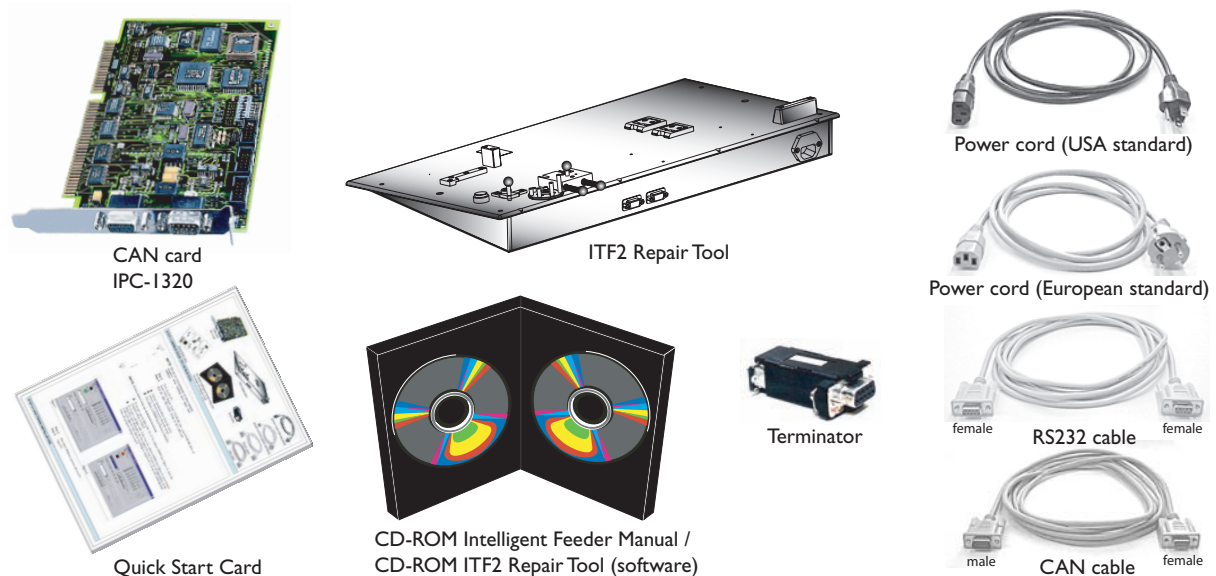


FIGURE 1-1

Parts overview

1. **The repair tool.** With this tool you will be able to repair up to 97% of all parts of the ITF2 feeder.
2. **The Quick Start Card.** This card is probably where most of you will start as soon as you open the box. In fact, after reading it, some of you will be so well informed that you won't need to open this manual.
3. **CAN-card iPC-1320.** This card supports Windows 95/98 and NT on your PC.
4. **Terminator 120 Ohm.** To terminate the open port of the CAN-card.
5. **CAN cable.** Use this to connect CAN-card to the repair tool.
6. **RS232 cable.** Use this to connect a free COM port to the repair tool.
7. **Electric Power Cord (USA standard).** Use this to connect the mains to the repair tool.
8. **Electric Power Cord (European standard).** Use this to connect the mains to the repair tool.
9. **The CD-ROMs.** There are two CD's inside the CD sleeve. The first contains the installing and operation software of the repair tool. The second CD contains this repair manual which is a part (tab) of the complete Intelligent Feeder Manual PDF file. In the Intelligent Tape Feeder (PA2654/xx) tab 5 you can find all needed information and instructions to replace spare parts of the ITF2 tape feeders.

1.4 System Requirements

- Minimum a microprocessor of 133Mhz.
- Windows NT 4.0 with Service Pack 4 or higher with 64 MB RAM and administrator rights or Windows 95B/98 with 32 MB RAM.
- Mouse (or other pointing device).
- SVGA 800x600.
- A least 35MB Megabytes of free disk space.
- 1 free ISA-slot and 1 free COM-port.

1.5 Overview

Figure 1-2 gives an overview of the ITF2 Repair Tool terminology.

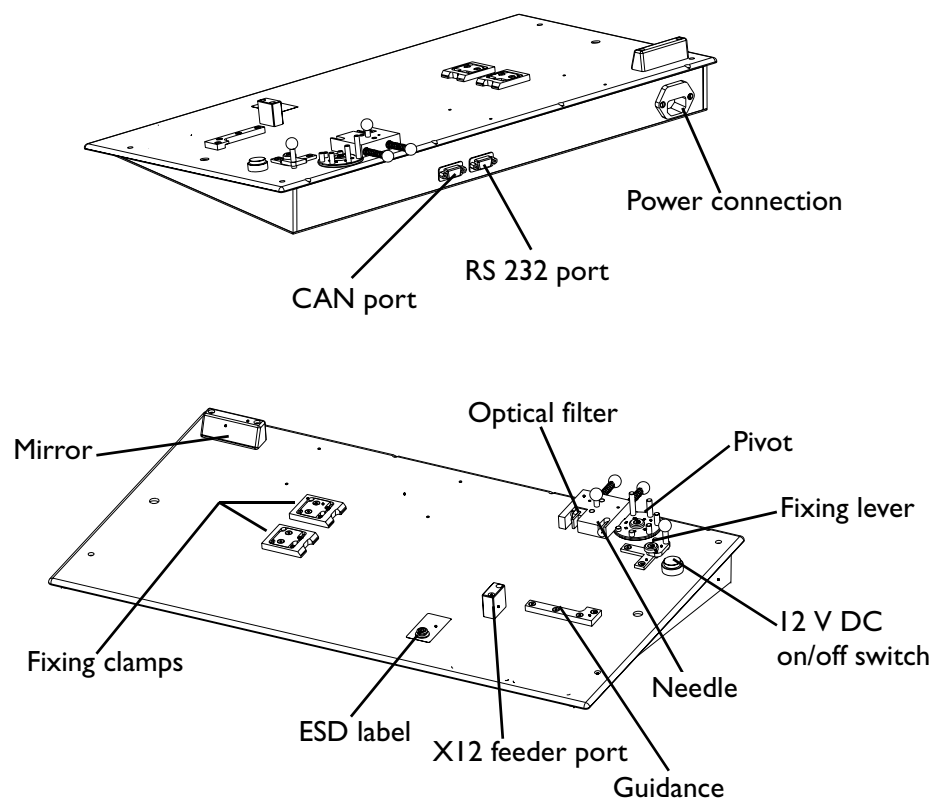


FIGURE 1-2

ITF2 Repair Tool

1.6 Identification

All ITF2 repair tools produced have been tested and are provided with an official label as shown in Figure 1-3.

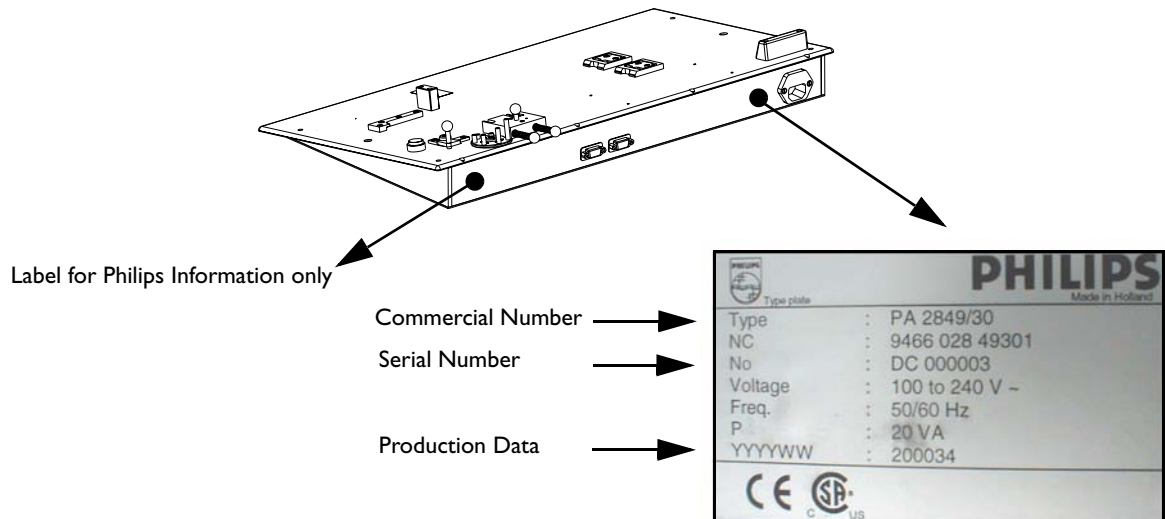


FIGURE 1-3

Identification label

1.7 Installation of the ITF2 Repair Tool

The installation procedure is divided into two parts:

Part 1: The installation of the tool procedure

Part 2: Installing the ITF2 tool onto an object (e.g. table) procedure

1.7.1 Installation Procedure



CAUTION

INSTALLATION OF THE CAN-CARD ONLY TO BE PERFORMED IN AN ESD WORK AREA.

After unpacking and checking the contents of the box, refer to section 1.3 and/or the Quick Start Card 4022 591 91051 installation can be started. Use the following steps or the Quick Start Card.

Step 1:

Unpack your ITF2 Repair Tool and check contents (see chapter 1.3 of this manual for parts overview).



NOTE: Do not run other software programs when installing your repair tool software.

Step 2:

Turn on your PC.

Step 3:

Insert 'ITF2 Repair Tool' CD-ROM into your CD-ROM drive to find the right dip-switch setting of the CAN-card:



NOTE: If menu ITF2 Repair Tool does NOT show up, doubleclick LAUNCH.EXE of CD-ROM. This step can only check if the address is free, NOT if the interrupt (IRQ) is free. The jumper on the CAN-card and the software of the ITF2 Repair Tool are default on IRQ5. If IRQ5 is already in use in your PC, follow instructions in chapter 2 of the iPC-i320-Manual.

- Choose 'INSTALL PRODUCTS' from the menu
- Choose 'CHECK RESOURCES' from the menu
- Put address on D0000 in Resource Selection
- If you get a green light with 'Try it' for address D0000 (see Figure 1-4), close the program and go to step 4.
- If you get a red light with 'Take Care' for address D0000 (see Figure 1-4), press the button 'Next free 16K'. Remember the free address for step 10 later on. Set dipswitches of the CAN-card right for this address according to chapter 4.1.1 of the iPC-i320-Manual. Close the program and go to step 4.

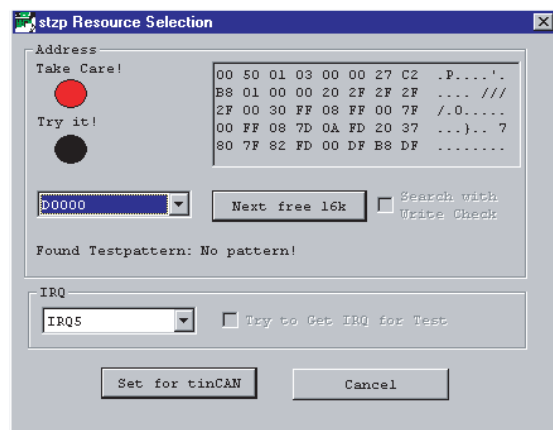
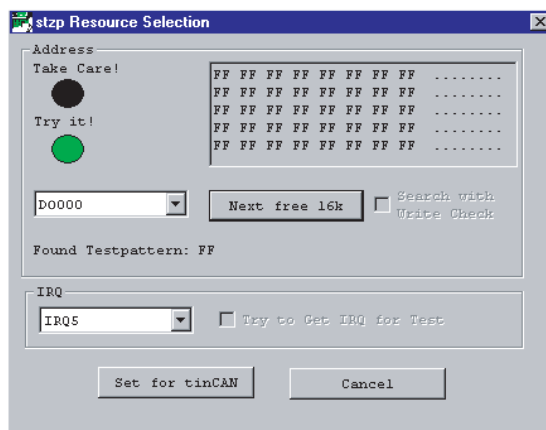


FIGURE 1-4

'Try it' + 'Take care' screen

Step 4:
Shut down Windows and turn off your PC.

Step 5:
Open PC.



WARNING

DISCONNECT THE MAINS BEFORE YOU OPEN THE PC.

Step 6:
Build in the CAN-card. Refer to the iPC-i320-Manual.



NOTE: Do not use the floppy that is delivered with the CAN-card.

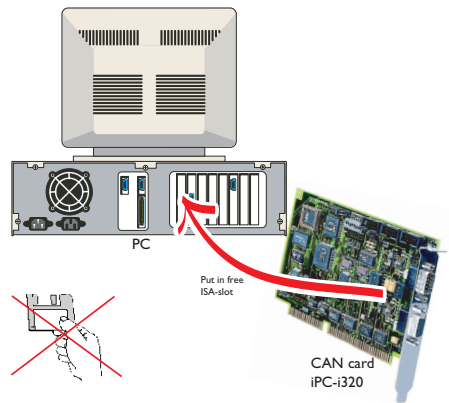


FIGURE I-5

Build in the CAN-card

Step 7:

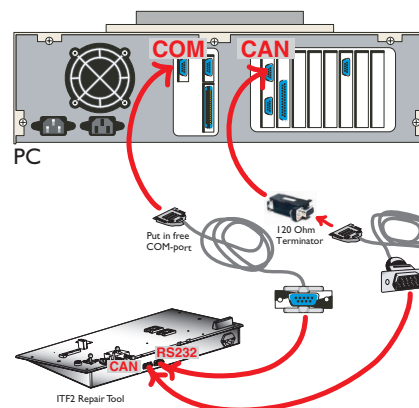


FIGURE I-6

Close PC and connect cables.

Step 8:

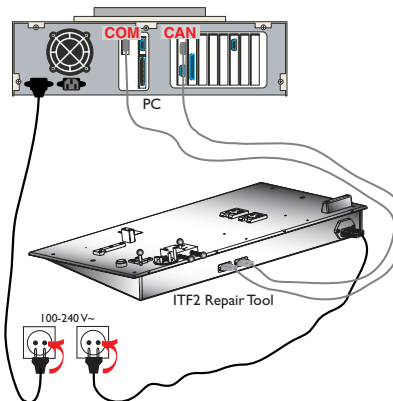


FIGURE I-7

Connect power cord / mains.

Step 9:

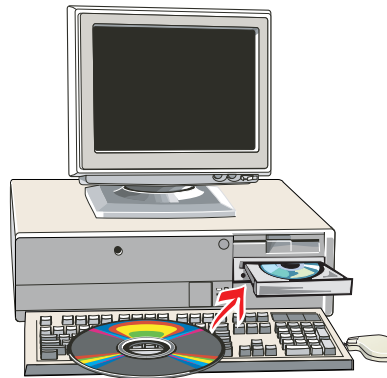


FIGURE I-8

Turn on PC / CD-ROM ITF2 Repair Tool.

Step 10:



NOTE: If menu ITF2 Repair Tool does NOT show up, doubleclick LAUNCH.EXE of CD-ROM.

- Choose 'INSTALL PRODUCTS' from the menu.
- If no Acrobat Reader has been installed on your pc, you can choose 'INSTALL ADOBE READER'.
- Choose 'UPDATE COMMON CONTROL' from the menu. When the installation menu asks: 'Do you want to restart your computer now?', press 'NO'.
- Choose 'INSTALL CAN DRIVER' from the menu. Follow instructions on the screen. If the installation menu asks: 'Do you want to restart your computer now?', press 'NO'.
- Choose 'INSTALL ITF2 REPAIR TOOL' from the menu. Follow instructions on the screen.
- Choose 'MAIN MENU'.

- Choose 'EXIT'.
- Restart your PC.
- Choose 'Start | Programs | ITF2 Repair Tool | ITF2 Repair Tool' and follow instructions on the screen.

1.7.2 Installing the ITF2 Repair Tool

The ITF2 repair tool can be installed onto any object in two ways:

- Unattached, freely moveable, onto any object
- Attached, fixed by screws, onto any object

1.7.2.1 Placing the ITF2 Repair Tool onto Any Object

For 'quick' use, on different locations the repair tool can be placed directly onto a table or any surface. Nine rubber feet at the bottom side of the tool guarantee a very good stability. The outline dimensions of the tool are shown in Figure 1-9. The dimensions exclude feeder dimensions.

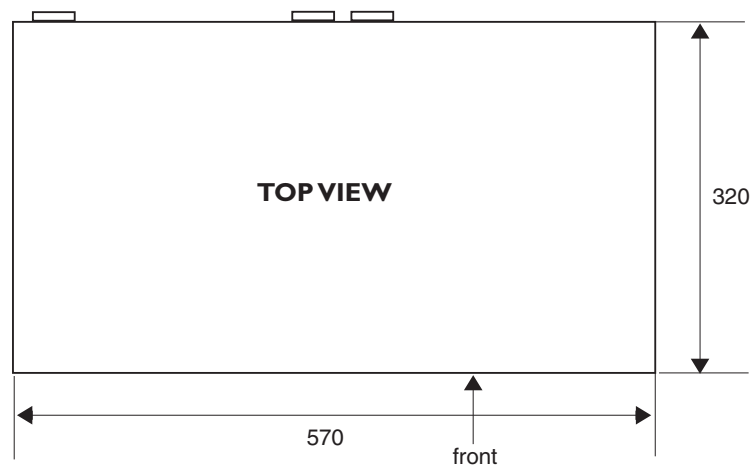


FIGURE 1-9

Outline dimensions (mm)



NOTE: The best way is to place the front of the tool in the same line or near the border of the table. If placed too far back onto the table, the reelholder of the feeder will push the feeder upward and test results are unreliable. Make also sure that there is enough space on the left side of the reelholder. This means that everyone can pass the tool and feeder easily without touching them.

A correctly and incorrectly placed tool is shown in Figure 1-10.

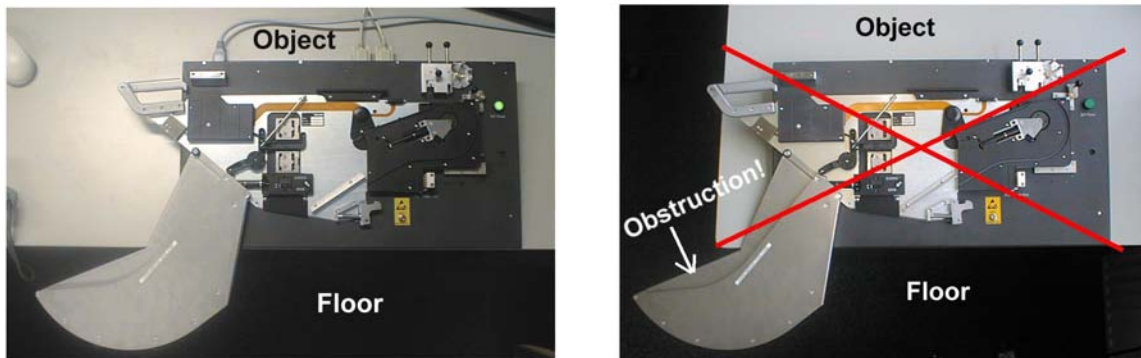


FIGURE 1-10

Correctly and incorrectly placed ITF repair tool

1.7.2.2 Mounting the ITF2 Repair Tool onto Any Object

When using the repair tool on a definitive location, the tool can be attached directly onto a table or any surface. Mounting instructions:

1. Remove, at the topside of the tool, the two rubber stops and in the same line the two rubber bottom stops.
2. Drill 2 fixing holes for screws of M4 into the platform of the object. It is up to you to use drilling or threaded holes. The fixing dimensions of the drilling holes are shown in Figure 1-11.

Required tools:

- Drilling machine
- Drill of 3.3 mm (treaded hole) + tap M4 Drill or drill 4.5 + 0.5 (through hole)

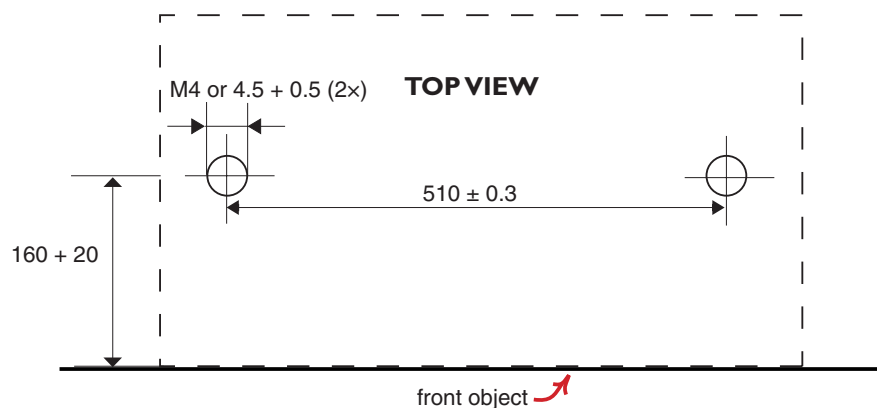


FIGURE 1-11

Fixing dimensions (mm)

3. Mount the tool onto the object by using 2 CSK scr of M4 with the correct length. The screws have to bought locally.
Make sure that the tool is mounted in such a way that the reelholder cannot push the feeder upward. See section 1.7.2.1.

1.8 Trouble Shouting

The table below gives an overview of the probable cause and remedy to solve problems regarding the installation of the repair tool. Check these aspects first before going to chapter 5: Trouble Shooting Repair Tool.

1.8.1 Repair Tool Installing Problems

After installation and a possible restart the PC seems to be dead or cannot read the software.

Probable Cause	Remedy	
■ Power cable not correct plugged into the wall	■ Correct the connection	1.7.1/QSC
■ CAN-CAN cable and/or RS232/COM cable connected not well	■ Correct the connection	1.7.1/QSC
■ PC and/or monitor button not switch ON and/or cables not properly connected well	■ Switch the button(s) ON and/or correct the connections	1.7.1/QSC
■ Net filter fuse(s) defective	■ Replace the fuse(s)	6.2.7
■ Bug with another Software program	■ Close all active programs on your PC	
OR		
■ Repair tool software not installed well	■ Close all programs and install the software again.	1.7.1/QSC

TABLE I-2

Power or software errors

I.9 Technical Data

General

Working temperature	0 to 40 Degrees C
Storage temperature	-20 to +70 Degrees C
Humidity	95% rel. Humidity
Height above sea level	2000m
Lifetime MTBF	8 Years or 500000 Test cycles

Power in

Net entry	IEC-Plug with EMI-Filter and 2 Fuses: Schaffner FN360-4/06
Fuses	2 x FST TIAL250V, Schurter
Plug Print	X1: Pin slat MTA 640445-5, Raster 3.96mm
Main switch	None
Input power supply	100 to 240 VAC
Input frequency	50/60Hz
Power consumption	20 VA
Activation ITF2-Repair Tool	By plugging in the power connector, the current measurement print is fed and it can communicate with the Host PC.

Feeders Supply

Plug	X3: SL3.5/12/90G/12pol, +12V = 12, GND = 11
Output voltage	12 V nominal
Tolerance	+/-2.5%
Output current	900 mA
Current limit	1.7 A
Feeder supply In/Out	IC5-23 = 0V or high impedance & button SI pushed in Feeder supply : In IC5-23 = +5V or button SI not pressed: Feeder supply : Off Signalizing IN state by lamp in green press button EAO 31-271.0252

TABLE I-3

Technical data

Intentionally left blank.

CHAPTER 2 Handling



CAUTION

THE REPAIR TOOL AND/OR FEEDER CONTAINS ESD SENSITIVE ELECTRONICS. TAKE ESD MEASURES TO PREVENT DAMAGE TO THE ELECTRONICS.



NOTE: For detailed description of repair tool main parts, refer to Chapter 3 of this manual.

2.1 Preparation

Recommended equipment to clean:

1. Vacuum cleaner or hairbrush
2. Isopropanol (Reagent Grade Alcohol)
3. Fiber free tissue
4. Soft, lint free, lens tissue



NOTE: Source isopropanol locally and apply in accordance with local safety regulations.

- Make sure that the ITF2 Repair Tool is placed or attached correctly onto an object. Refer to section 1.7.2.
- Make sure that all cables are connected well. Refer to section 1.7.
- Make sure that the green DUT power button is switched off. Refer to section 3.1.1.
- Make sure that the tool (top basis plate) is free of components and debris. Clean if necessary with a vacuumcleaner and/or fiber free tissue moistened with isopropanol.
- Make sure that the intelligent feeder is free of components and debris. Clean if necessary. Clean the feeder interface and backplate only with a vacuumcleaner and/or fiber free tissue moistened with isopropanol.
- Make sure that the mirror is clean. Remove fingerprints, dust and dirt. Clean if necessary with a fiber free tissue moistened with isopropanol.
- Make sure that the neutral density filter glass is always clean. Remove fingerprints, dust and dirt. Clean if necessary with a soft, lint free, lens tissue.
- Make sure to connect with the ESD safety protection installed. Refer to section 3.1.1.

2.2 Operating the ITF2 Repair Tool

2.2.1 Positioning the Feeder onto the Tool

Place the feeder as shown in Figure 2-1. Check always first (visible) if the feeder is complete and in a good condition.

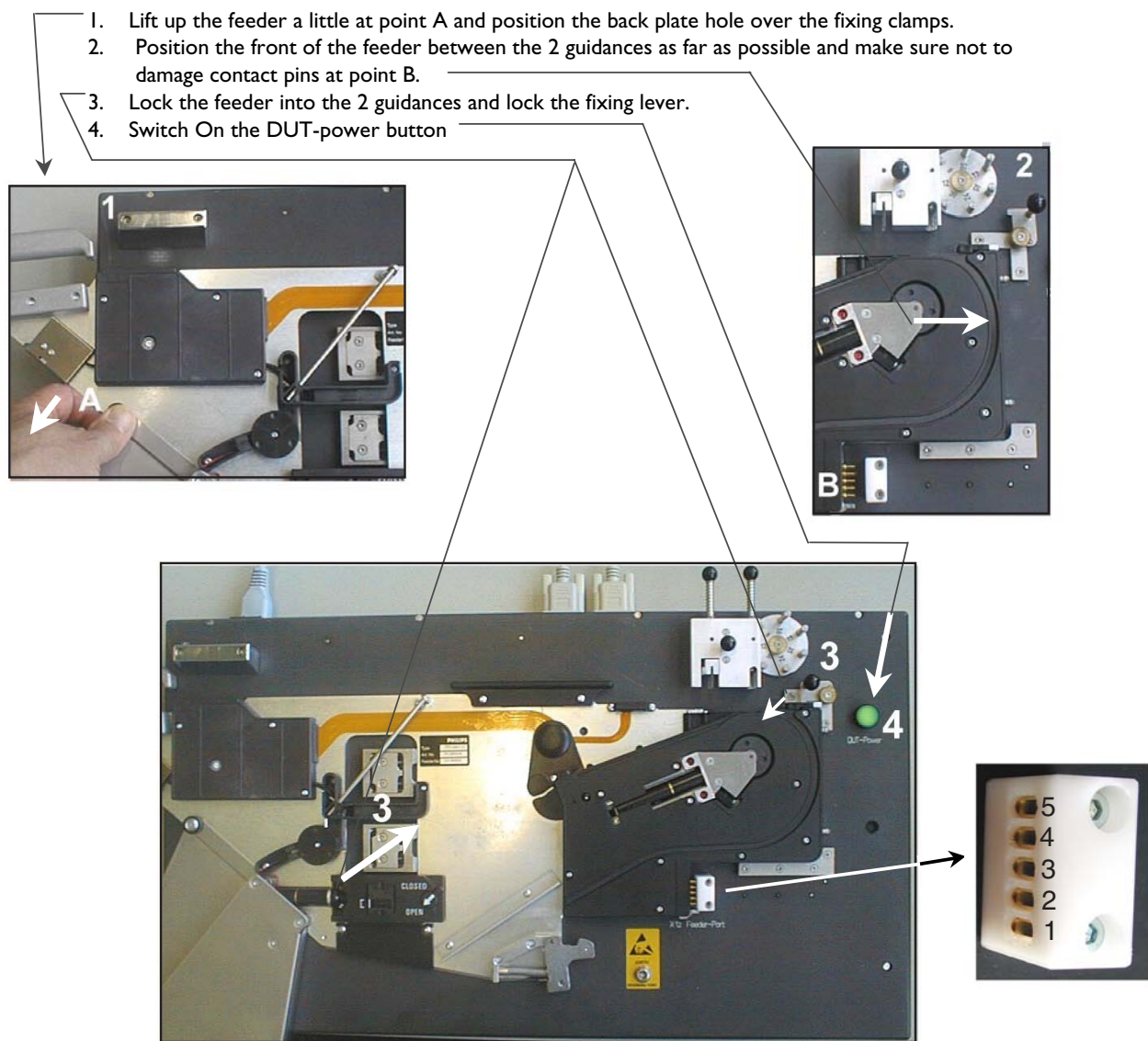


FIGURE 2-1

ITF2 feeder placed onto the ITF2 Repair Tool



NOTE: In order not to influence the results, the feeder must lay completely flat onto the tool surface.

2.3 Analyzing a Tape Feeder

After switching ON of the DUT-power the feeder is ready for analyzing.

2.3.1 Start-up the PC

After PC and Monitor are switched ON, the analyzing program of the feeder can be started via start-program-ITF2 Repair Tool. See Figure 2-2. For easier start-up make the shortcut **ITF2RT.exe** on your main screen.

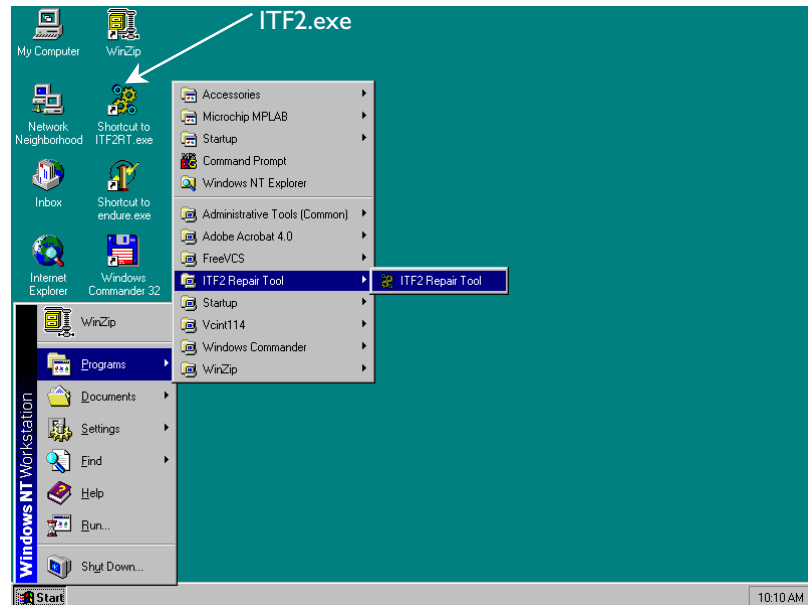


FIGURE 2-2

ITF2 feeder placed onto the ITF2 repair tool

2.3.2 Main Screen

After start-program-ITF2 Repair Tool the main screen displays feeder number and the number of cycles of that feeder. Figure 2-3 shows the main screen.

CPU load: Shows the relative load of the CAN processor (n %)

Bus Load: Shows the Can bus load (in %)

CAN send Queue: Objects in queue (max. red.-14 objects)

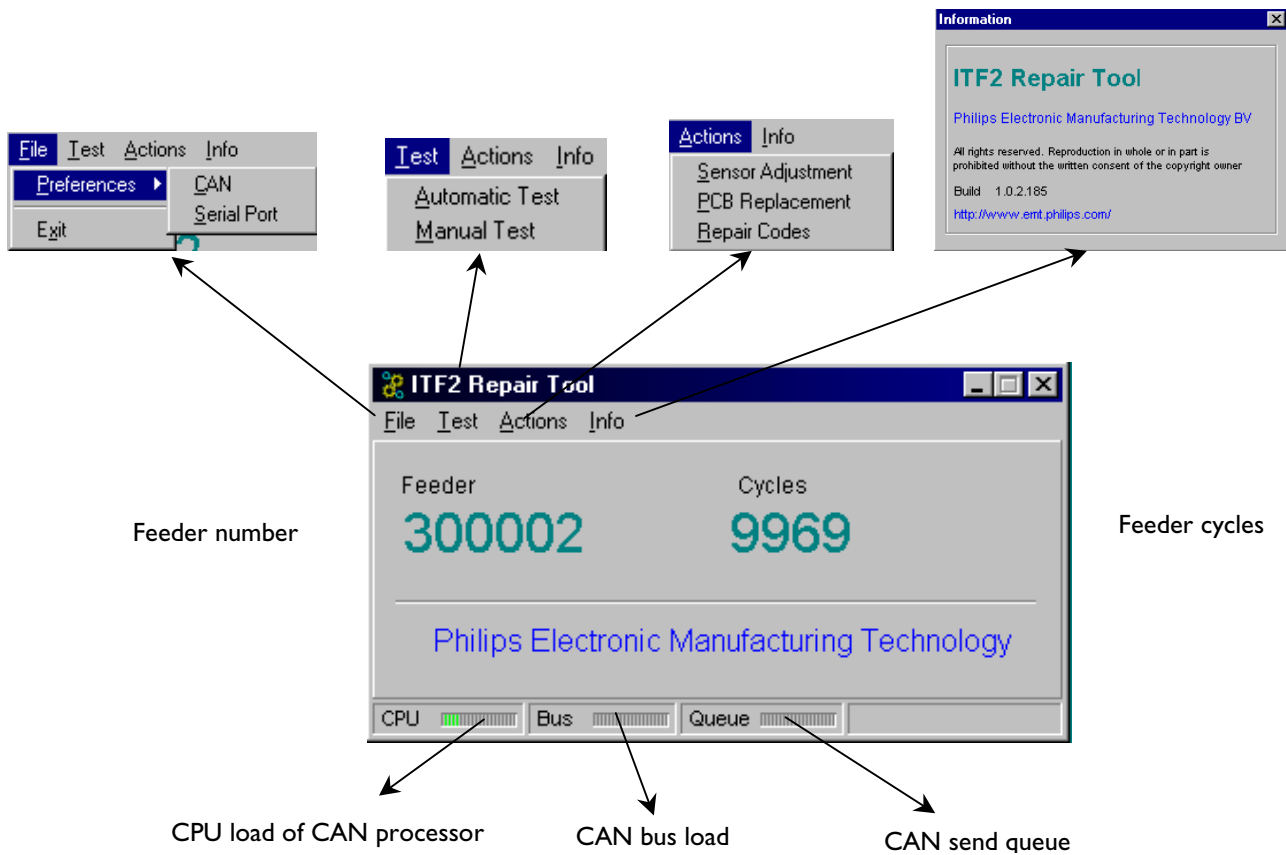


FIGURE 2-3

Main screen

2.3.3 Automatic Test

The automatic testing dialog screen automatically carries out ten tests in feeder automatic test series. All these sequences are shown in Figure 2-4.

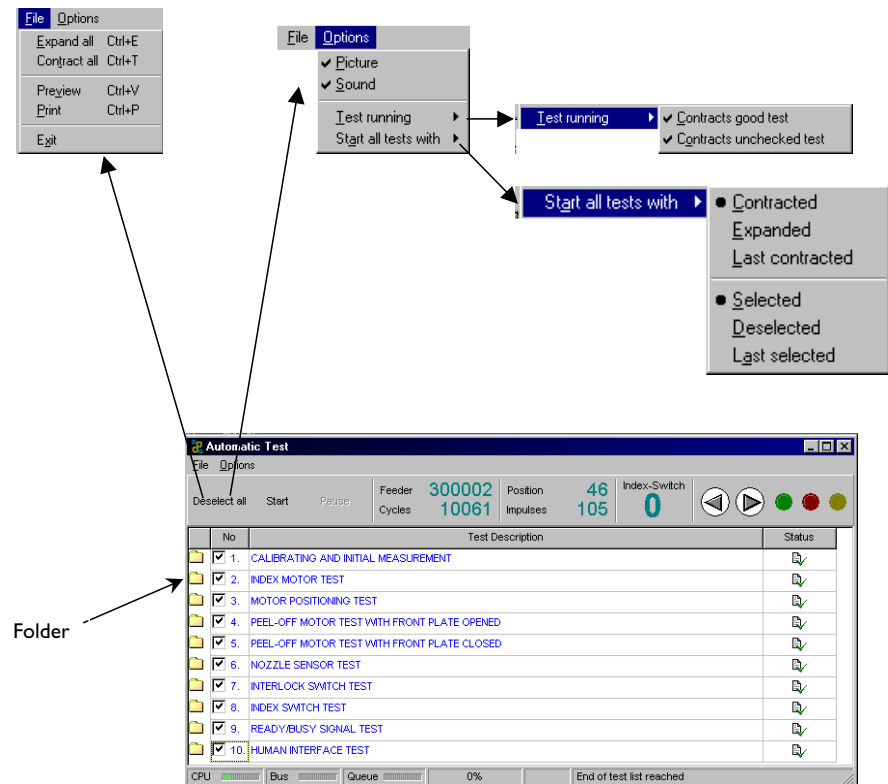


FIGURE 2-4

Automatic tests

File

- **Expand all:** All subfolders will be expanded
- **Contract all:** All subfolders will be contracted
- **Preview**
- **Print**
- **Exit:** Exit to main screen

Options

- **Picture:** Show pictures during test.
- **Sound:** Play sound during test.
- **Test running**
 - > **Contracts good test:** When activated all good tests will be contracted.
 - > **Contracts unchecked tests:** When activated all unchecked tests will be contracted.
- **Start all tests with:** This option determines which sub-folders will be contracted and which tests will be selected when the automatic test is started from the main screen.

The 10 automatic tests also consist of test steps. After clicking a folder a sub-folder will be opened. Figure 2-5 shows the first 4 sub-folders of the test.

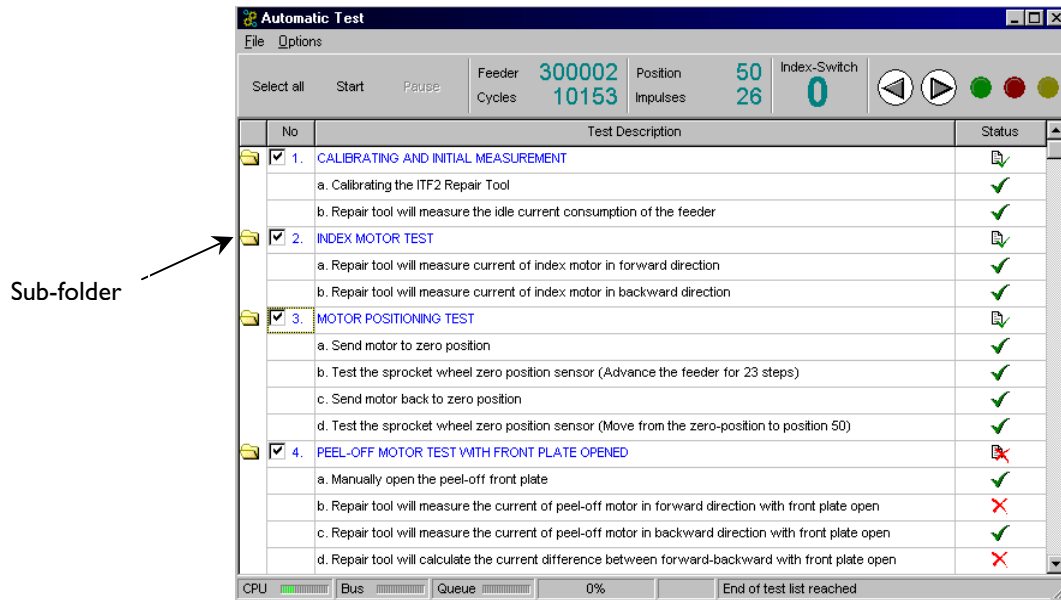


FIGURE 2-5

Automatic tests sub-folders overview

- Every step can be done separately by selecting the number.
- Start the program by clicking 'Start'.
- The status shows if the current test was successfully executed or detected. A check mark indicates a success sequence and a cross indicates a failed one. The program uses the symbols 'checkmark with sheet' and 'cross with sheet' for pass and fail indicator in a subtest. A sub-test will fail, if any of its tests steps fails. Double-click gives more detailed information.

After selecting file-print a report can be printed. This report is printed on an A4 sheet or letter containing only the automatic testing result. Figure 2-6 shows the first 4 tests and a screen shot of print preview, with only sub-test 4 tested.

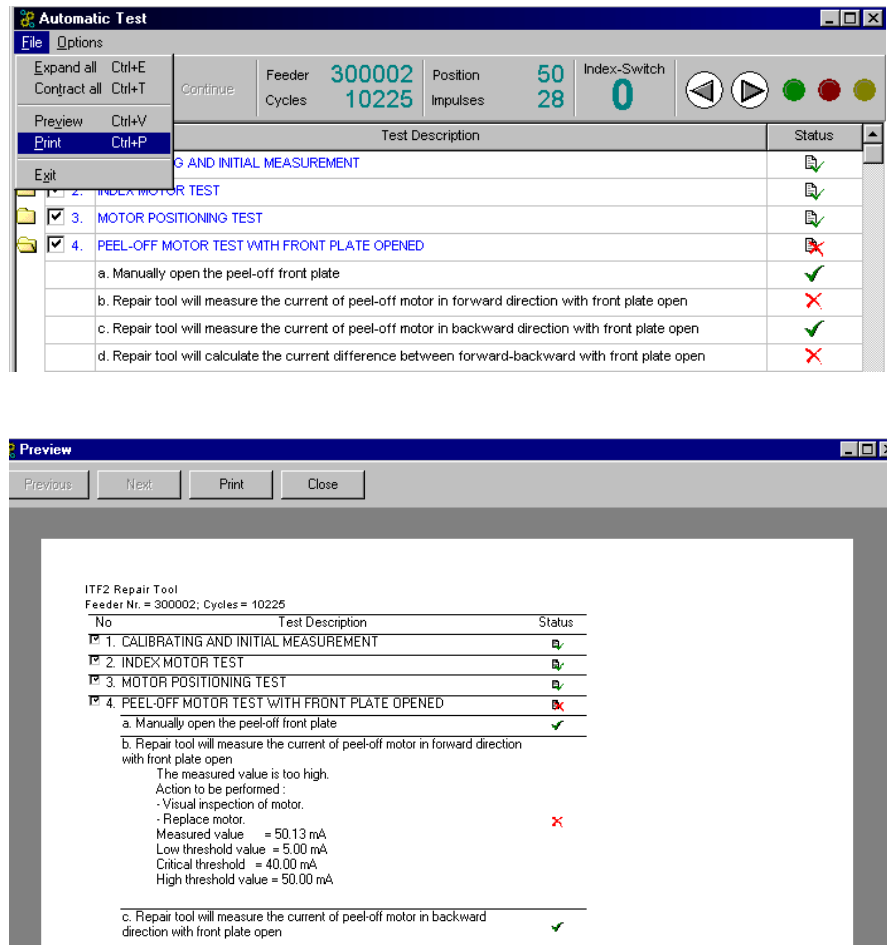


FIGURE 2-6

Automatic tests print preview

2.3.4 Manual Test

With the manual test dialog screen a number of tests can be tested. It gives only a global impression of the feeder status. For optimal and detailed test results always use the automatic test. The manual tests are shown in Figure 2-7.

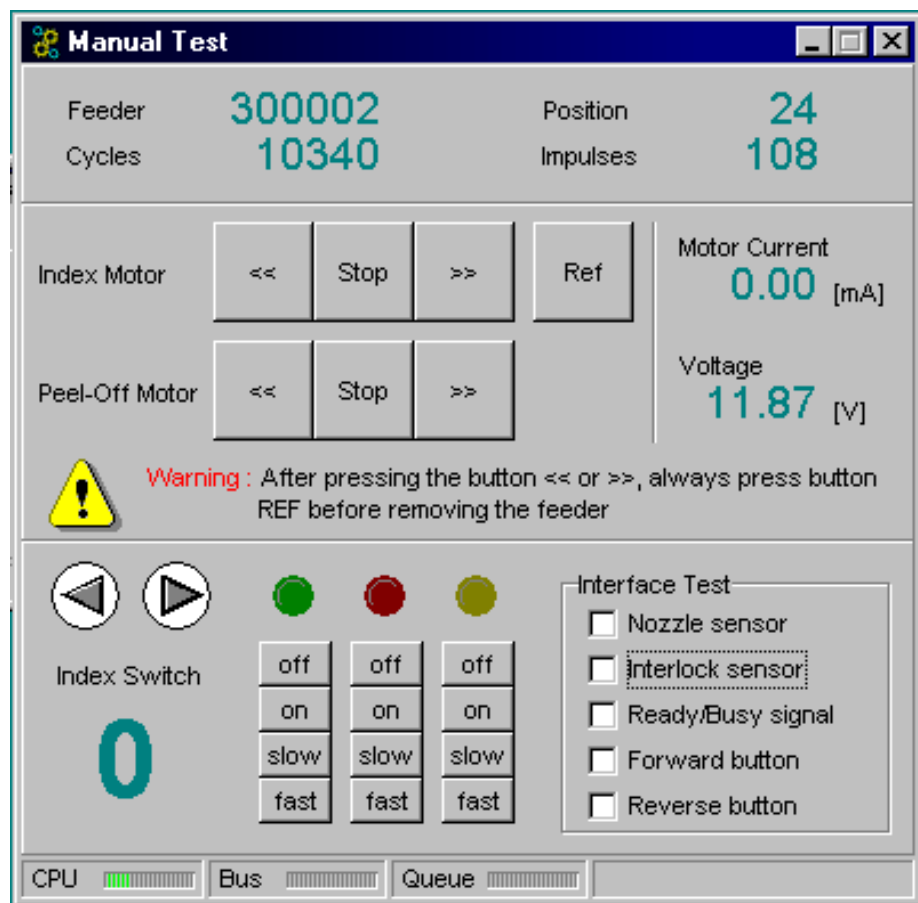


FIGURE 2-7

Manual tests overview

2.3.5 Actions

After selecting actions 3 items can be carried out:

- Sensor adjustment
- PCB replacement
- Repair codes

2.3.5.1 Nozzle Sensor Adjustment

After starting action-sensor adjustment the nozzle sensor adjustment screen is displayed. After giving start and selecting options-picture-sound first the complete adjustment procedure will be shown step by step. Figure 2-8 shows this adjustment with a picture of test 1. Follow instructions on screen.

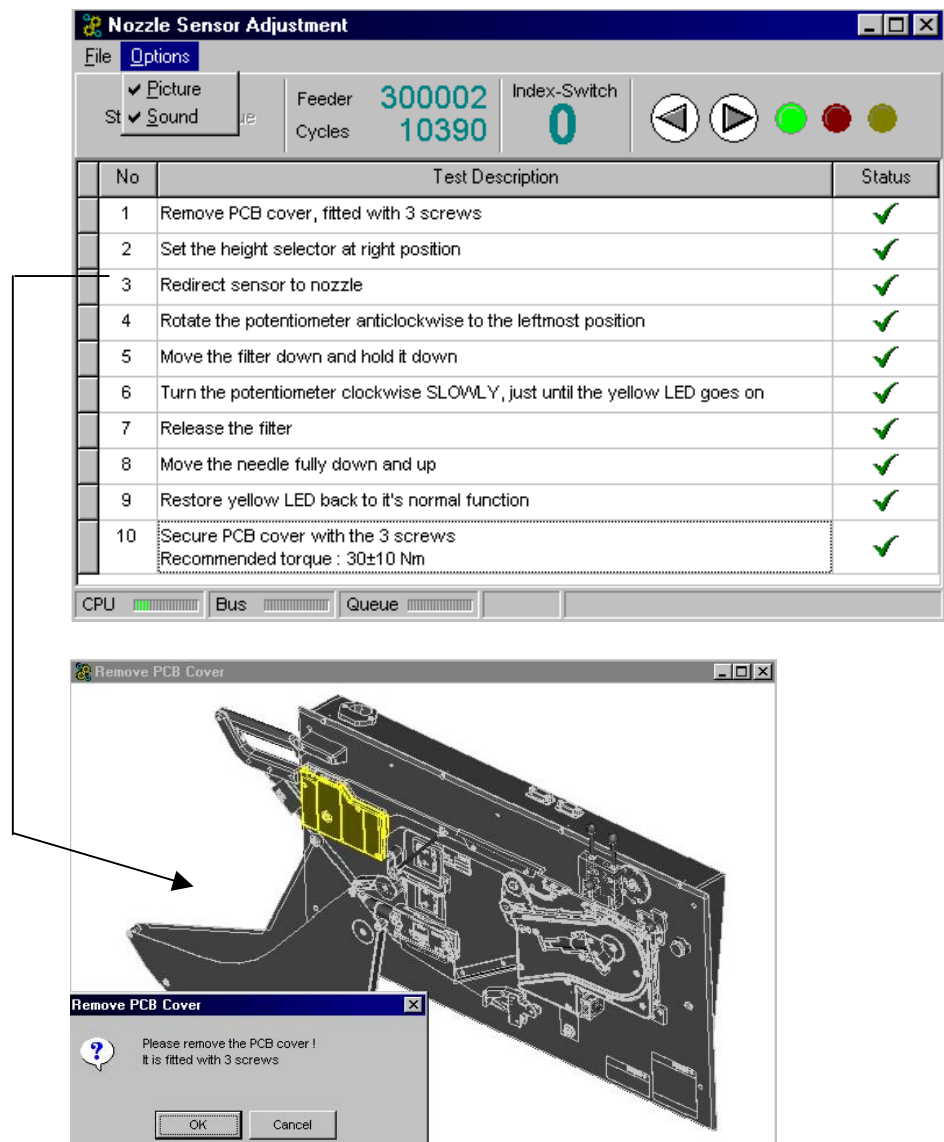


FIGURE 2-8

Nozzle sensor test overview

2.3.5.2 PCB Replacement

After starting action-PCB replacement the serial number and the cycle counter will be displayed. Figure 2-9 shows this display. Follow instructions on screen.

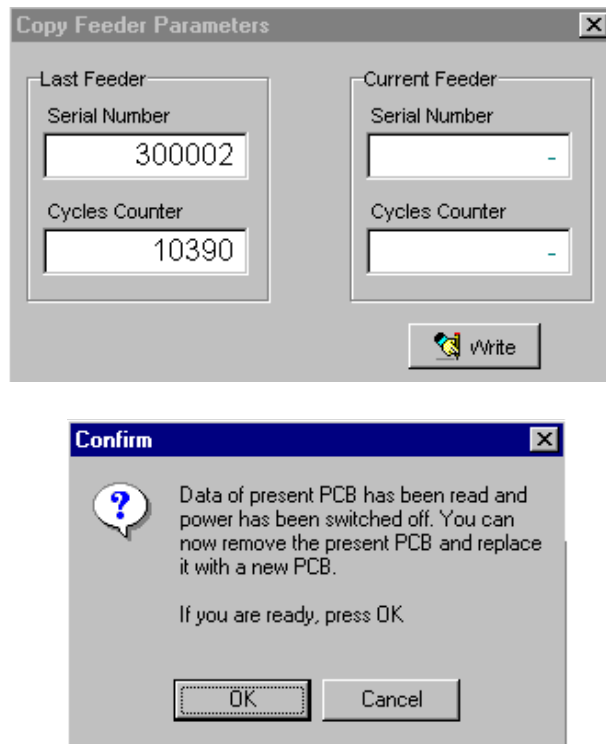


FIGURE 2-9 PCB replacement screen overview

Replacement of the PCB



CAUTION

THIS UNIT CONTAINS ESD SENSITIVE ELECTRONICS. TAKE ESD MEASURES TO PREVENT DAMAGE TO THE ELECTRONICS.

Instructions:

References as shown in figure 2.10

- Loosen the 3 screws and remove PCB cover from the PCB housing.
- Disconnect successively: flatcable 1, microswitch wire 2, motor wire 3, flat cable 4 and flat cable 5. Push lips upward to disconnect the 3 flat cables from the connectors. Disconnect the 2 wire cables directly out-off contact blocks.
- Take the PCB out of the housing.
- Assemble in reverse order. Screw torque: **30+10 Ncm**. Make sure not to damage the 2 black wires. This means that the wires must be running well through the rectangular recesses of the bottom and cover PCB housing.

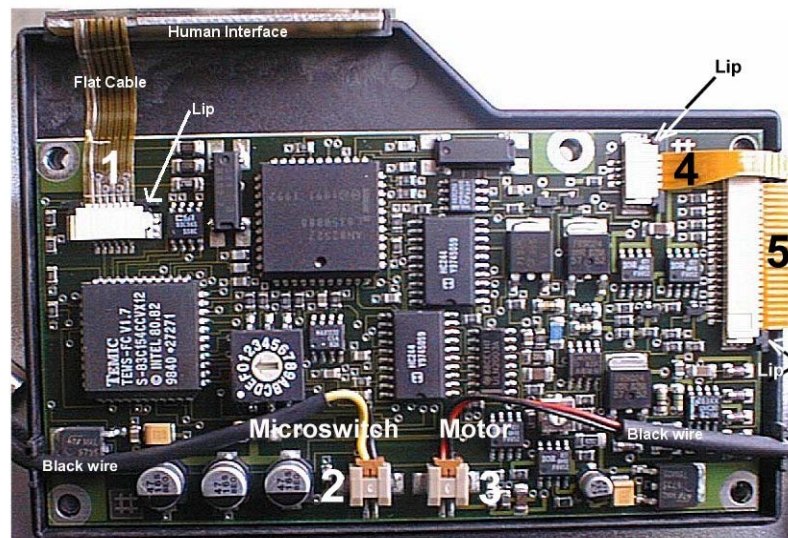


FIGURE 2-10 PCB replacement

Figure 2-11 shows the screens after mounting a new PCB and switching ON the power.

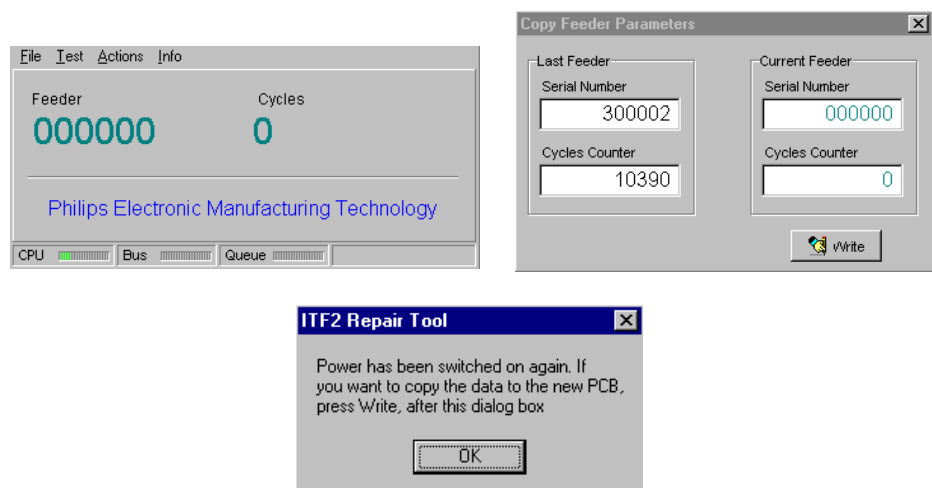


FIGURE 2-11 PCB replacement screen overview

Figure 2-12 shows the screens after pressing 'OK' of ITF2 repair tool dialog box. Press 'write' and proceed with press 'OK' of the confirm dialog box.

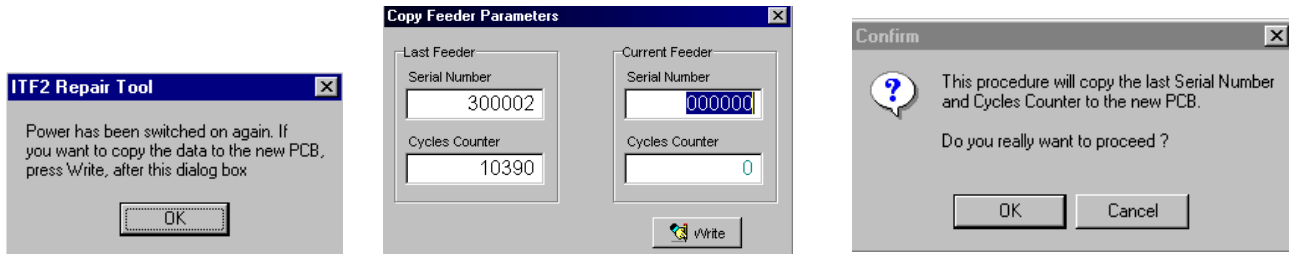


FIGURE 2-12

PCB replacement screen overview

Figure 2-13 shows the screens after pushing and holding the forward button on the feeder and pressing 'OK' of the ITF2 repair tool dialog box. The current feeder has copied the data, serial number and cycles counter from the last feeder.

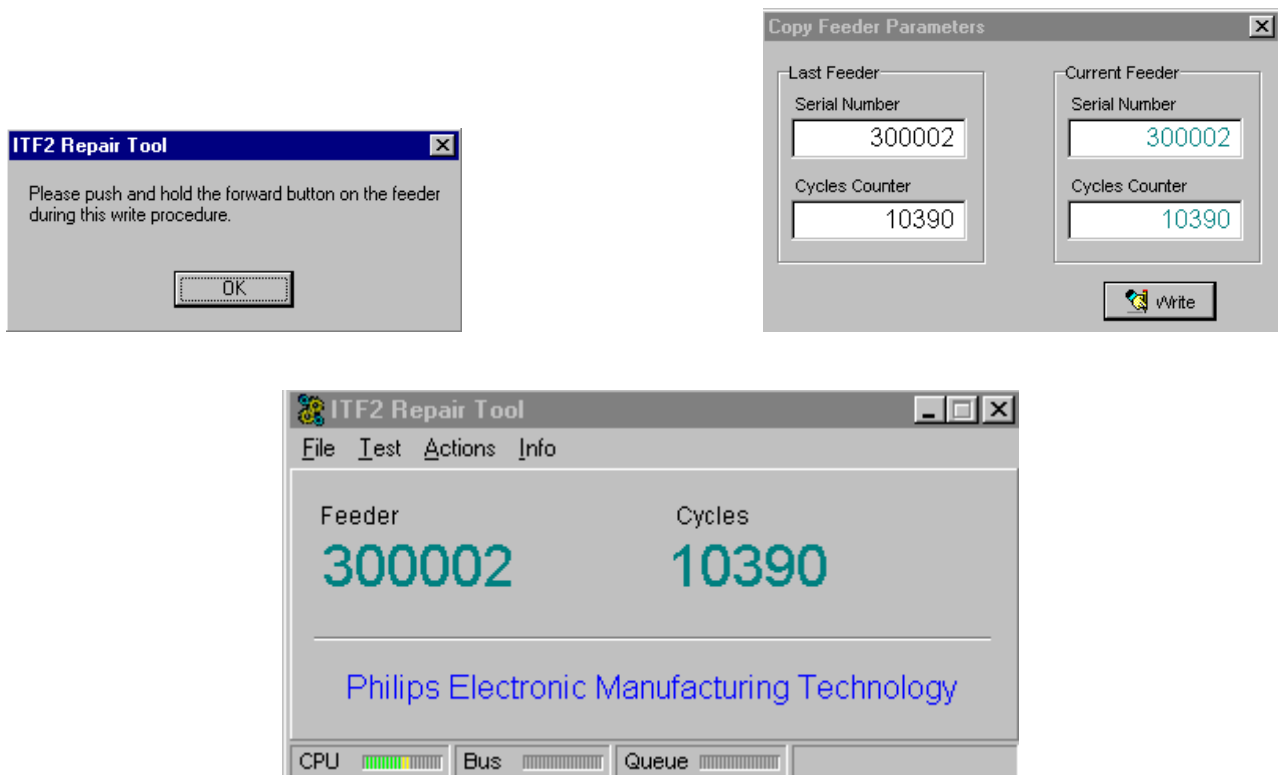


FIGURE 2-13

PCB replacement screen overview



NOTE: After replacement of the PCB the nozzle sensor always needs to be checked and/or adjusted. Refer to section 2.3.5.1.

2.3.5.3 Repair Codes

The repair codes windows allow the user to add services codes in the feeder's EPROM. Fill in the service codes only after **all repairs** have done.

- Fill in the feeder correct repair codes in the fields 1 to 4, refer to figure 2-14.

Bank	Cycle Counter	Code 1	Code 2	Code 3	Code 4
1	2.265.467	18	0	0	0
2	1.401.987	10	0	0	0
3	501.359	15	3	0	0
4	38.000	4	0	0	0

New values

3.602.354 22 0 0 0

Write Close Help

FIGURE 2-14

Repair codes

- Click 'Help' for the correct feeder repair codes. Figure 2-15 shows the feeder repair codes.

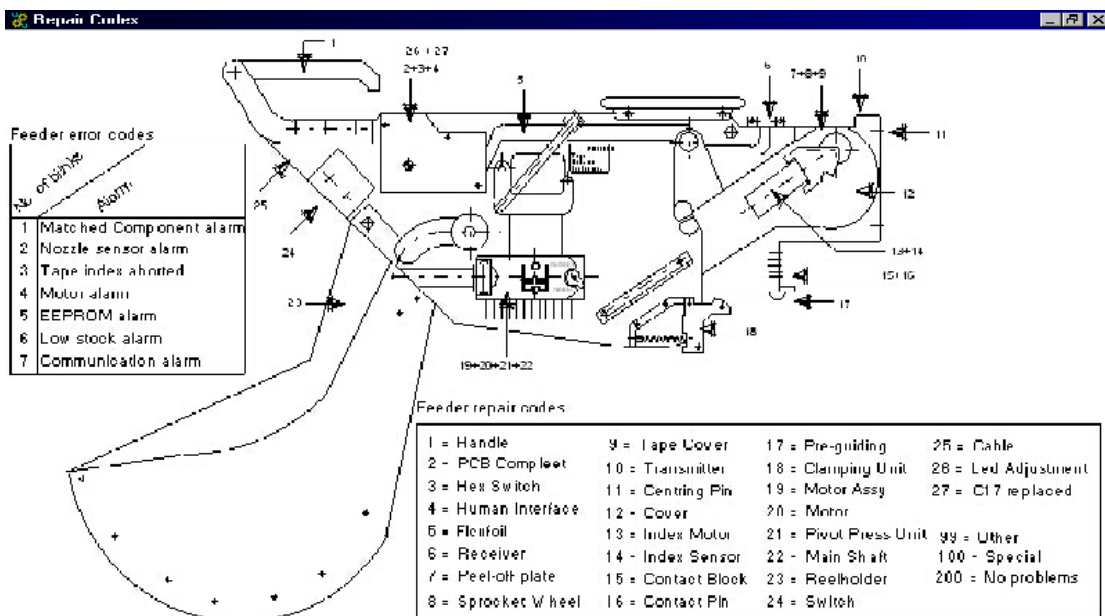


FIGURE 2-15

Repair codes overview



NOTE: Use only the repair codes as given in figure 2-15.

- If all feeder repair codes have been filled in, click 'Write'. This operation will overwrite the oldest entry in the table.
- To proceed click 'OK'.
- Close the screen by clicking 'close'.

After filling in all repair codes the feeder is ready for re-use. Switch the feeder to the correct index setting. Index settings are shown in Figure 2-16.



NOTE: Do not set the switch into the '0' position. This position is reserved for a special service and production mode.

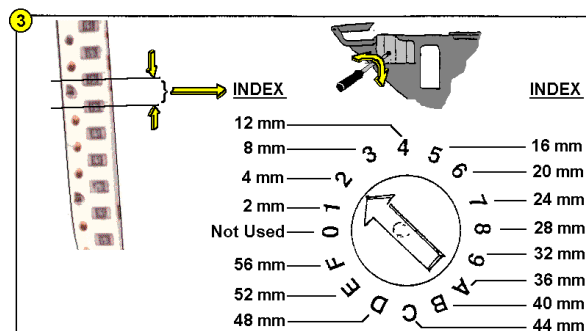


FIGURE 2-16

Index setting

CHAPTER 3 Functional Description

3.1 Module Overview

Figure 3.1 provides a main parts overview of the ITF2 Repair Tool.

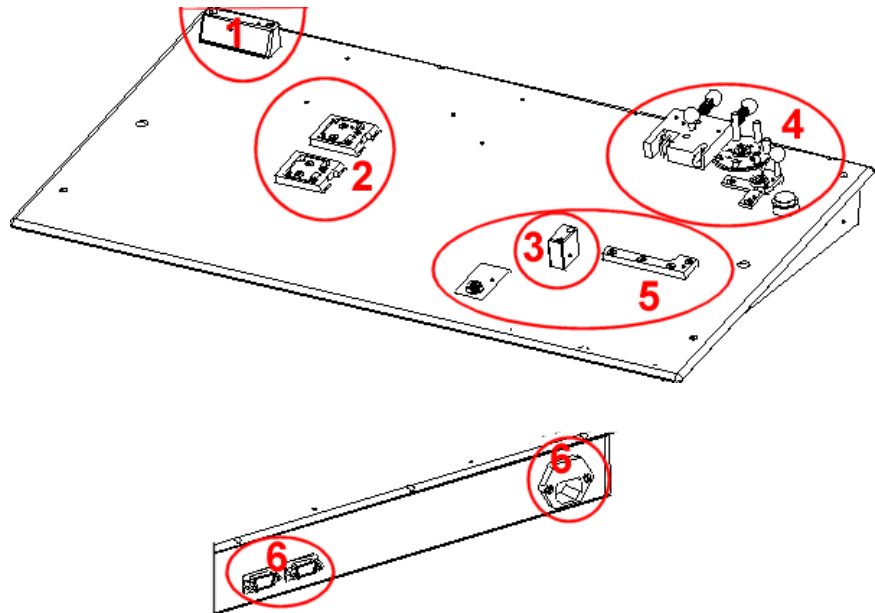



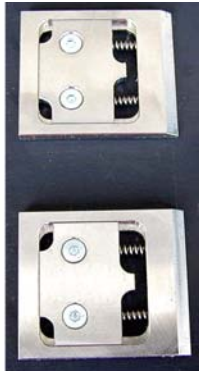
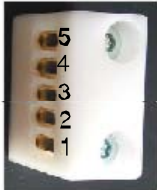
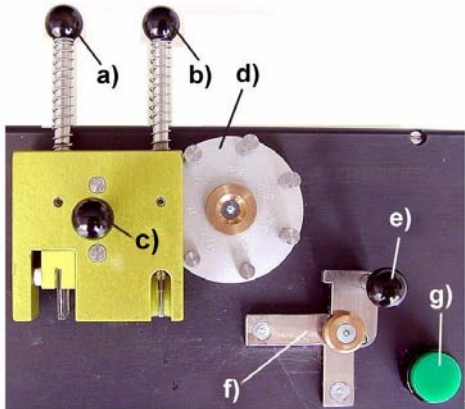
FIGURE 3-1

ITF2 Repair Tool assembly

1. Mirror
2. Fixing clamps
3. X12 feeder-port
4. Detail above the right side
5. Detail down on the right side
6. Connections

3.1.1 Main Parts Description

Table 3.1 gives a detailed description of the main parts of the tool.

<p>1</p> 	<p>Mirror</p> <p>Reflects the LED's of the feeder. This way the functioning of LED's can be checked easily.</p>
<p>2</p> 	<p>Fixing clamps</p> <p>When placing the feeder on the repair tool, the feeder must be pushed down until the 2 fixing clamps click.</p>
<p>3</p> 	<p>X12 Feeder-port</p> <p>The five contact pins of the feeder can be placed in the X12 feeder-port.</p>
<p>4</p> 	<p>Detail above on the right side</p> <p>Sensor Adjustment Unit (a, b, c and d)</p> <p>a) Neutral density filter (glass) handle Manual operation of the filter reduces the light emission.</p> <p>b) Needle handle Manual operation of the needle interrupts the light beam.</p> <p>c) Lift up handle Sensor Adjustment Unit can be adjusted in height when other feeder dimension is chosen.</p> <p>d) Pivot To bring the pin for the right width of the feeder.</p> <p>e) Fixing lever For fixing the feeder.</p> <p>f) Guidance Supports correct placing of the feeder.</p> <p>g) DUT-power (Device Under Test) 12VDC On/Off power switch.</p>

(Continue on next page)

(Continued)

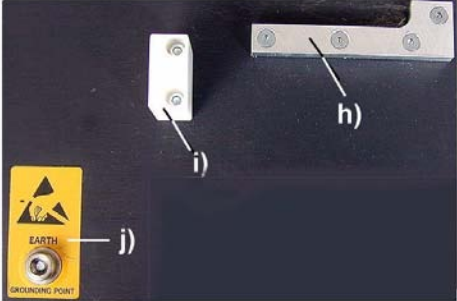
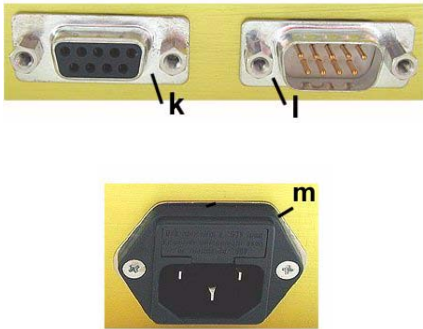
<p>5</p> 	<p>Detail down on the right side</p> <p>h) Guidance Supports correct placing of the feeder.</p> <p>i) X12 feeder-port (See detail 3).</p> <p>j) ESD safety connection User must connect him self with the ESD safety connection before working with the ITF2 repair tool and Feeder.</p>
<p>6</p> 	<p>Connections</p> <p>k) X10 CAN-port For connecting the repair tool to the CAN-card of the PC.</p> <p>l) X11 RS232-port For connecting the repair tool to a free COM-port of the PC.</p> <p>m) Power connections For connecting the mains to the repair tool.</p>

TABLE 3-I

Main parts description

Intentionally left blank.

CHAPTER 4 Maintenance Description

4.1 Preventive Maintenance Schedule

Every feeder fitting check consist of:

- Check the repair tool body and interface on: damages, dirt and dust.
- Check the feeder body and interface on: damages, dirt and dust.
- Check the repair tool mirror on: fingerprints, dirt and dust.
- Check the repair tool neutral density filter (glass) on: fingerprints, dirt and dust.



NOTE: Do not use oil or other chemicals or lubricants. Clean feeder and tool only by means of the equipment as given in section 4.2.1. Chemicals damage the plastic parts or may cause short circuits in the electrical parts.

ITEM	EVERY FEEDER FITTING	DAILY	WEEKLY	OPERATING HOURS				REPLACEMENT
				500	1500	3000	6000	
Repair tool body and interface • Clean	0.1 min.							
Tape feeder body and interface • Clean	0.1 min.							
Repair tool mirror • Clean		0.1 min.						
Repair tool density filter • Clean		0.1 min.						
Repair tool glass needle assembly • Clean / lubricate				2 min				
Repair tool • Replace								5 Years or 150.000 feeder exchanges
Total	0.2 min.	0.2 min.		2 min				

TABLE 4-I

Preventive Maintenance Schedule: Repair Tool

4.2 Maintenance Instructions

4.2.1 Required Equipment

- Vacuum cleaner or hairbrush
- Isopropanol (Reagent Grade Alcohol)
- Fiber free tissue
- Soft, lint free, lens tissue
- Molykote G-N plus
- Allen key s=1.5 mm
- Q tip



NOTE: Source isopropanol locally and apply in accordance with local safety regulations.



NOTE: Source Molykote G-N plus locally and apply in accordance with local safety regulations

4.2.2 Repair tool body and Interface

Clean the body and interface with a vacuum cleaner or hair brush and/or fiber free tissue lightly moistened with isopropanol.

4.2.3 Tape feeder body and Interface

Clean the body and interface with a vacuum cleaner or hair brush and/or fiber free tissue lightly moistened with isopropanol.

4.2.4 Repair tool mirror

Clean the mirror with a fiber free tissue lightly moistened with isopropanol.

4.2.5 Repair tool neutral density filter

Clean the filter with a soft, lint free, lens cleaning tissue.

4.2.6 Repair tool glass needle block assembly

Clean and lubricate the assembly, specially the guiding bearings and 2 guiding axis if movement performance decreases.

Instructions:

References as shown in figure 4-1.

- Loosen and remove the 2-ball knobs (1) and springs (2) by hand.
- Loosen and remove, by using an Allen key s=1.5mm (3) the 2 Allen screws (4) as far as the 2 guiding pins (5) can be removed.

- Remove pollution and/or old grease by cleaning the 2 sliding bearing (6) with a Q tip (7) lightly moistened with isopropanol.
- Remove pollution and/or old grease by cleaning the 2 guiding pins with a fiber free tissue lightly moistened with isopropanol.
- Assemble in reverse order by greasing the two guiding pins first with a thin layer Molykote G-N plus.
- Tighten, with a light force, the 2 Allen screws, loosen and rotate the screws (counter clockwise) over about 90 degrees or ¼ stroke. Prevent damages of the pins, so make sure that the screws falls into the flat faces (8) of the pins.
- Check the functioning of the guiding pins and make sure that the pins move easily.

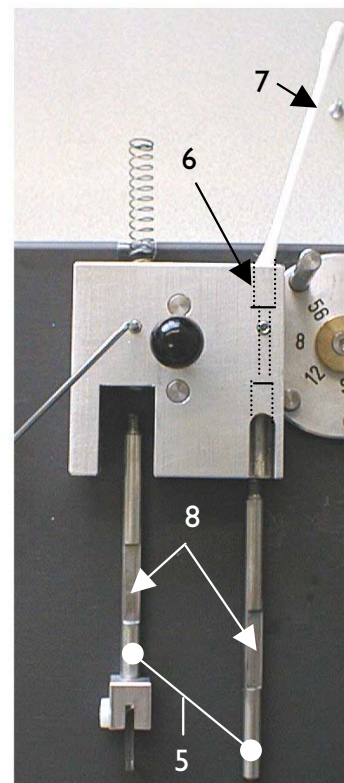
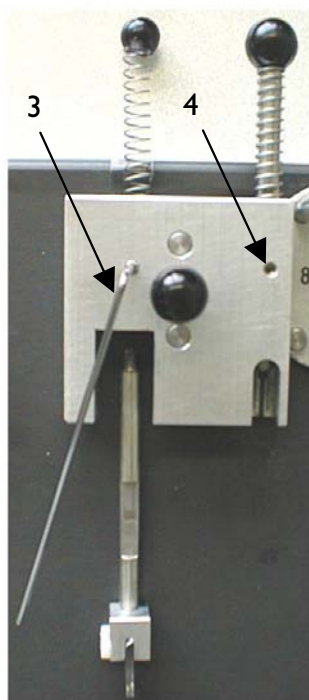
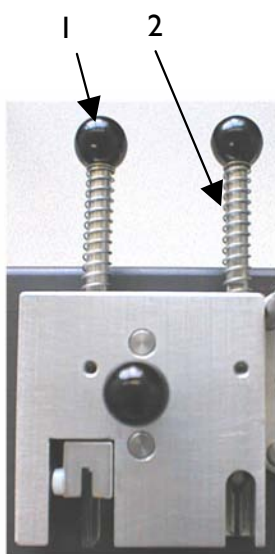


FIGURE 4-I

Cleaning/greasing glass needle block assembly

4.3 Corrective maintenance

In general, parts only need to be exchanged when mechanically or electrically defect. The average lifetime of a repair tool is 5 years or **150.000** feeder exchanges. This can only be achieved with:

- Regular maintenance as described in 4.2.
- Correct handling of the tool.
- Careful handling of the tool (e.g. do not let it fall down).
- Storage in clean places.

Replacements of parts can be found in chapter 6.

CHAPTER 5 Trouble Shooting

5.1 Introduction

The following sections give an overview of problems that are experienced in the ITF2 Repair Tool. It will relate to the probable cause and the remedy to solve this problem. Nearly all error messages of these six sections are given via the PC screen. Searching for all the causes is complicated so check always first installing problems, refer to Chapter 1, section 1.8.1.



NOTE: As remedy, check always first: close program, restart and check if the problem still occurs.

5.1.1 ITF2 Repair Tool does not Display Feeder and Cycles

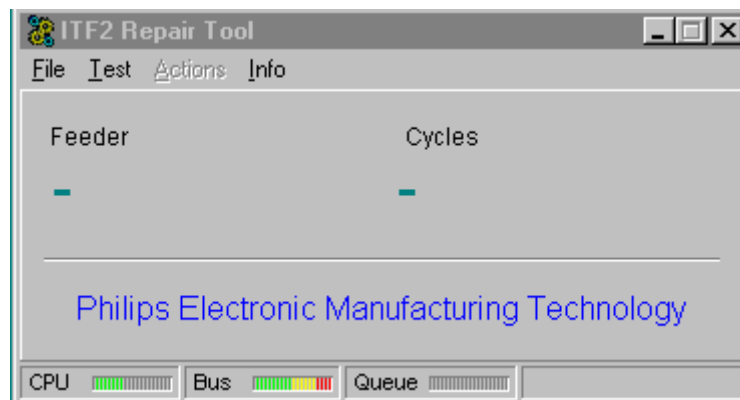
Tool does not display any data can be split into 2 parts:

Part 1: Tool does not display any data and the power switch does not light up.

Part 2: Tool does not display any data and the power switch lights up.

5.1.1.1 Tool does not Display any Data (power switch does not light up)

The message below is coming up on the PC screen after the DUT-power is switched on and does not light up. Check or correct the following aspects.



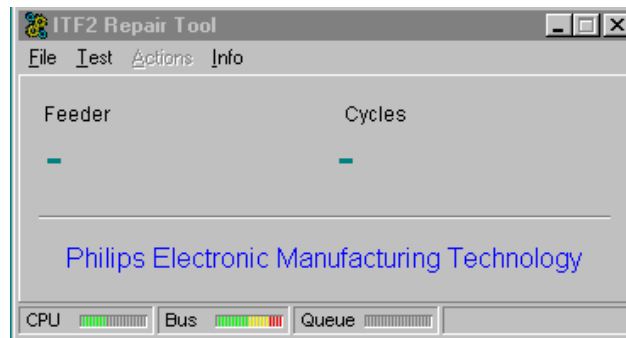
Probable Cause	Remedy	Section
■ Wires of the On/off assembly and/or measurement PCB not connected correctly or damaged	■ Check/correct the wires	6.2.8
■ On/off switch of the On/off assembly defective	■ Replace the On/off assembly	6.2.8

TABLE 5-I

Tool connection problems

5.1.1.2 Tool does not Display any Data (power switch lights up)

The message below is coming up on the PC screen after the DUT-power is switched on and the power switch **lights up**. Check or correct the following aspects.



Probable Cause	Remedy	Section
■ Feeder not fitted correctly onto the tool (X12 feeder port)	■ Check/correct connection between the contact pins and/or X12 feeder port	2.2.1
■ Contact pin no. 5 damaged/missing	■ Check/correct contact pin	2.2.1

TABLE 5-2

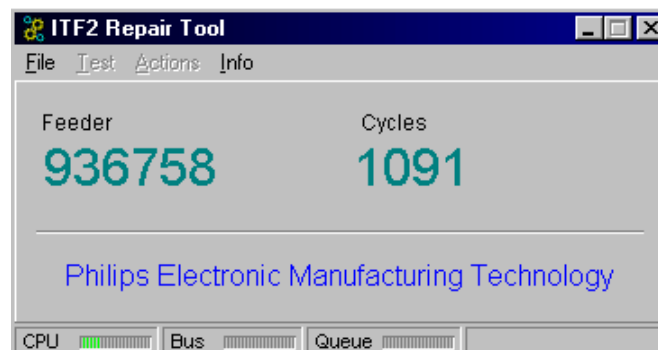
Tool connection problems



TIP: For a first quick reference check, replace the feeder by a properly working one to check if the problem is in the feeder or in the tool.

5.1.2 ITF2 Repair Tool Displays Feeder and Cycles

After the DUT power switch is switched on the lamp will light up. The message below is coming up on the PC screen after the DUT-power is switched on and the power switch **does not light up**. Check or correct the following aspects.



■ Lamp of the On/off assembly defective	■ Replace the On/off assembly	6.2.8
---	-------------------------------	-------

TABLE 5-3

Tool connection problems

5.1.3 Feeder Detected on Tool but no CAN Communication

The feeder detected on tool but no communication can be split into 2 parts:

Part 1:Feeder does not read any data and the power switch does not light up.

Part 2:Feeder does not read any data and the power switch lights up.

5.1.3.1 Feeder Detected on Tool but no CAN Communication (power switch does not light up)

The message below is coming up on the PC screen after the DUT-power is switched on and **does not light up**. Check or correct the following aspects.



Probable Cause	Remedy	Section
■ Wires of the On/off assembly and/or measurement PCB not connected correctly or damaged	■ Check/correct and/or replace the On/off assembly	6.2.8

TABLE 5-4

CAN communication problems

5.1.3.2 Feeder Detected on Tool but no CAN Communication (power switch light up)

The message below is coming up on the PC screen after the DUT-power is switched on and lights up. Check or correct the following aspects.



Probable Cause	Remedy	Section
■ Incorrect CAN cable connection	■ Check/correct CAN connection	1.8.1/QSC
■ Wires of the X12 feeder port inside the tool and/or connection to the PCB incorrect	■ Check/correct connection	6.2.8
■ Wires of the CAN connector inside the tool incorrect	■ Check/correct connection	6.2.6
■ Wires of the PCB connector inside the tool incorrect	■ Check/correct connection	6.2.6
■ Contact pin no. 2 and/or 3 damaged or missing	■ Check/correct contact	2.2.1

TABLE 5-5

CAN communication problems



TIP: For a first quick reference check, replace the feeder by a properly working one to check if the problem is in the feeder or in the tool.

5.1.4 No Response at COM Port

No response at COM port can be split into 3 parts:

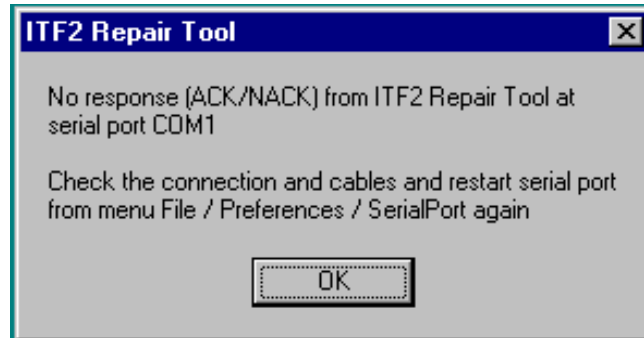
Part 1: No response at COM port and the power switch does not light up.

Part 2: No response at COM port and the power switch lights up.

Part 3: No response at COM port and the power switch is continually lighting up.

5.1.4.1 No Response at COM Port (power switch does not light up)

The message below is coming up on the PC screen after the DUT-power is switched on and does not light up. Check or correct the following aspects.



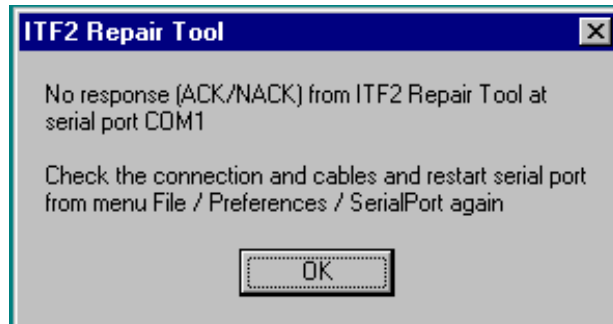
Probable Cause	Remedy	Section
■ Power cable not correct plugged into the wall	■ Check/correct connection	1.8.1/QSC
■ Net filter fuse(s) defective	■ Replace the fuse(s)	6.2.7
■ Check wires of net entry to the PCB connector inside the tool	■ Check/correct connection	6.2.6
■ Check the wires of the net entry	■ Check/correct connection	6.2.6

TABLE 5-6

RS232 (COM) connection problems

5.1.4.2 No Response at COM Port (power switch lights up)

The message below is coming up on the PC screen after the DUT-power is switched on and lights up. Check or correct the following aspects.



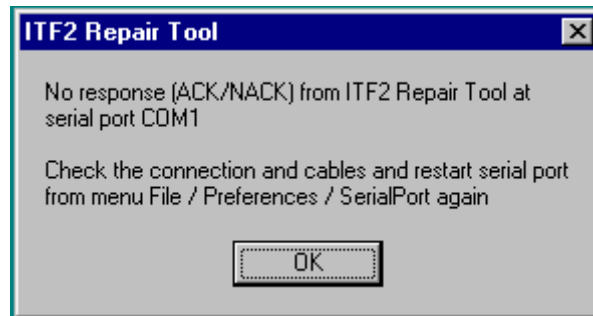
Probable Cause	Remedy	Section
■ Incorrect RS232 cable connection	■ Check/correct connection	1.8.1/QSC
■ Wires of the RS232 connector inside the tool incorrect	■ Check/correct connection	6.2.6
■ Wires of the PCB connector inside the tool incorrect	■ Check/correct connection	6.2.6

TABLE 5-7

RS232 (COM) connection problems

5.1.4.3 No Response at COM Port (power switch continuing light up)

The message below is coming up on the PC screen after the DUT-power continually lights up. The button cannot be switched off! Check or correct the following aspects.



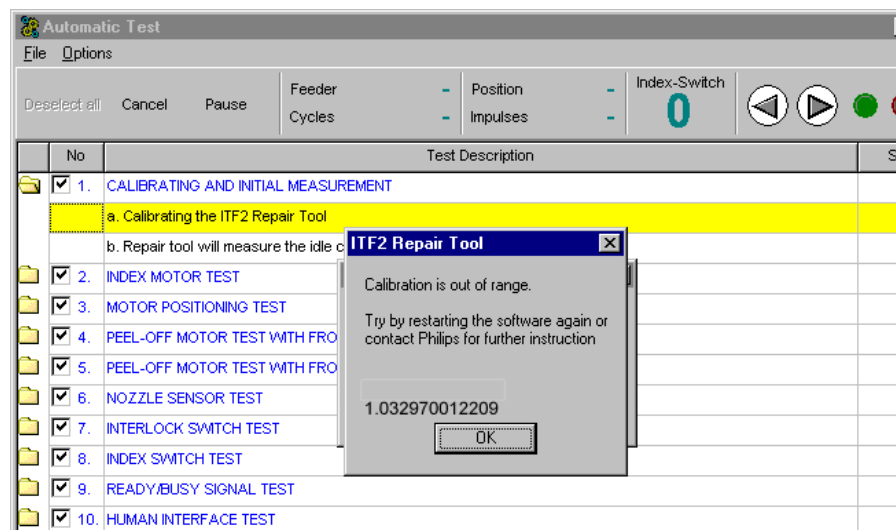
Probable Cause	Remedy	Section
■ PCB measurement defective	■ Replace PCB	6.2.6

TABLE 5-8

RS232 (COM) connection problems

5.1.5 If Calibration Goes Wrong

Each time the software of the repair tool is started the software will perform an automatic calibration just before the first current measurement. If the message below is coming up on the PC screen after the software of the tool is started up, check or correct the following aspects.



Probable Cause	Remedy	Section
■ PCB measurement defective	■ Replace PCB	6.2.6

TABLE 5-9

Calibration Problems



NOTE: Replace the measurement PCB only after all trouble shooting given in earlier sections are failed.



TIP: Searching for the cause of the measurement PCB can be complicated. For a quick and easy check replace the PCB by a new one. So it is advisable to take one PCB as a spare on stock to save time and money for analyzing.

5.1.6 Nozzle Sensor Adjustment not Possible or Difficult

After selecting Actions-Sensor Adjustment via the Main screen, refer to section 2.3.2 the screen displays the adjustment procedure. Table 5-10 shows this screen. If adjustment of the sensor is not possible check and correct the following aspects.

Nozzle Sensor Adjustment

File

Options

Start

Pause

Feeder

Cycles

936758

1107

Index-Switch

0

◀

▶

●

●

●

No	Test Description	Status
1	Remove PCB cover, fitted with 3 screws	
2	Set the height selector at right position	
3	Redirect sensor to nozzle	
4	Rotate the potentiometer anticlockwise to the leftmost position	
5	Move the filter down and hold it down	
6	Turn the potentiometer clockwise SLOWLY, just until the yellow LED goes on	
7	Release the filter	
8	Move the needle fully down and up	
9	Restore yellow LED back to it's normal function	
10	Secure PCB cover with the 3 screws Recommended torque : 30±10 Nm	

CPU

Bus

Queue

Probable Cause	Remedy	Section
■ Neutral glass filter damaged/missing or dirty	■ Check/clean or replace filter	6.2.1/6.2.4
■ Needle damaged or missing	■ Check or replace needle	6.2.2/6.2.4
■ Knob or spring damaged or missing	■ Replace knob (s) or spring(s)	6.2.3/6.2.4
■ Glass needle block assembly (parts) polluted and/or damaged	■ Clean and/or replace assembly	4.2.6/6.2.4

TABLE 5-10

Nozzle sensor adjustment problems



TIP: For a first quick reference check, replace the feeder by a properly working one to check if the problem is in the feeder or in the tool.



NOTE: Replace the neutral density filter always by an original to prevent incorrect adjustment.

CHAPTER 6 Replacement Instructions

6.1 List of Tools

Table 6-1 gives a recommended list of tools and materials for repairing and cleaning of the ITF2 Repair Tool. All tools can be obtained locally.

Recommended tools and materials	
■ Cleaning Material	<ul style="list-style-type: none"> • Vacuum cleaner (for in the workshop) • Isopropanol (Reagent Grade Alcohol) Apply in accordance with local safety regulation • Soft lint-free, lens cleaning tissue • Lint free tissue paper • Soft lint-free cloth • Q-tip
■ Lubricating Material	<ul style="list-style-type: none"> • Molykote G-N plus Apply in accordance with local safety regulation
■ Fastening Tools	<ul style="list-style-type: none"> • Allen key s=1.5mm, s=2mm
■ Screwdrivers:	<ul style="list-style-type: none"> • Phillips 0, 2, 3 • Cross slotted Phillips 01
■ Other Tools	<ul style="list-style-type: none"> • Nippers • Pliers (small flat)

TABLE 6-1

List of tools



WARNING

TO AVOID ELECTRICAL SHOCK, DO NOT OPEN THE REPAIR TOOL WITH MAINS CONNECTED. SERVICING TO BE PERFORMED BY QUALIFIED PERSONNEL ONLY.



WARNING

TO PREVENT FIRE OR SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. BEFORE REMOVING THE COVER FROM THE HOUSING, DISCONNECT FIRST THE 110-220 VDC MAINS.



CAUTION

TO AVOID COMPONENT DAMAGE BY ESD, CONNECT BODY MASS TO ESD POINT BEFORE OPENING THE REPAIR TOOL.



WARNING

REPLACEMENTS ONLY TO BE PERFORMED BY QUALIFIED PERSONNEL IN APPROPRIATE WORKSHOPS.



WARNING

TO FULFILL ALL SAFETY REGULATIONS, ALL REMOVED SCREWS MUST BE RE-ATTACHED TO THE UNIT. MISSING SCREWS WILL VIOLATE SAFETY REGULATIONS.

6.2 Replacement Instructions: PA2849/30

The replacement procedures of the PA2849/30 ITF2 Repair Tool will refer to the item numbers as shown in figure 6-1. They can also be found in the spare parts list of Chapter 8 on page 8-2 and 8-4.

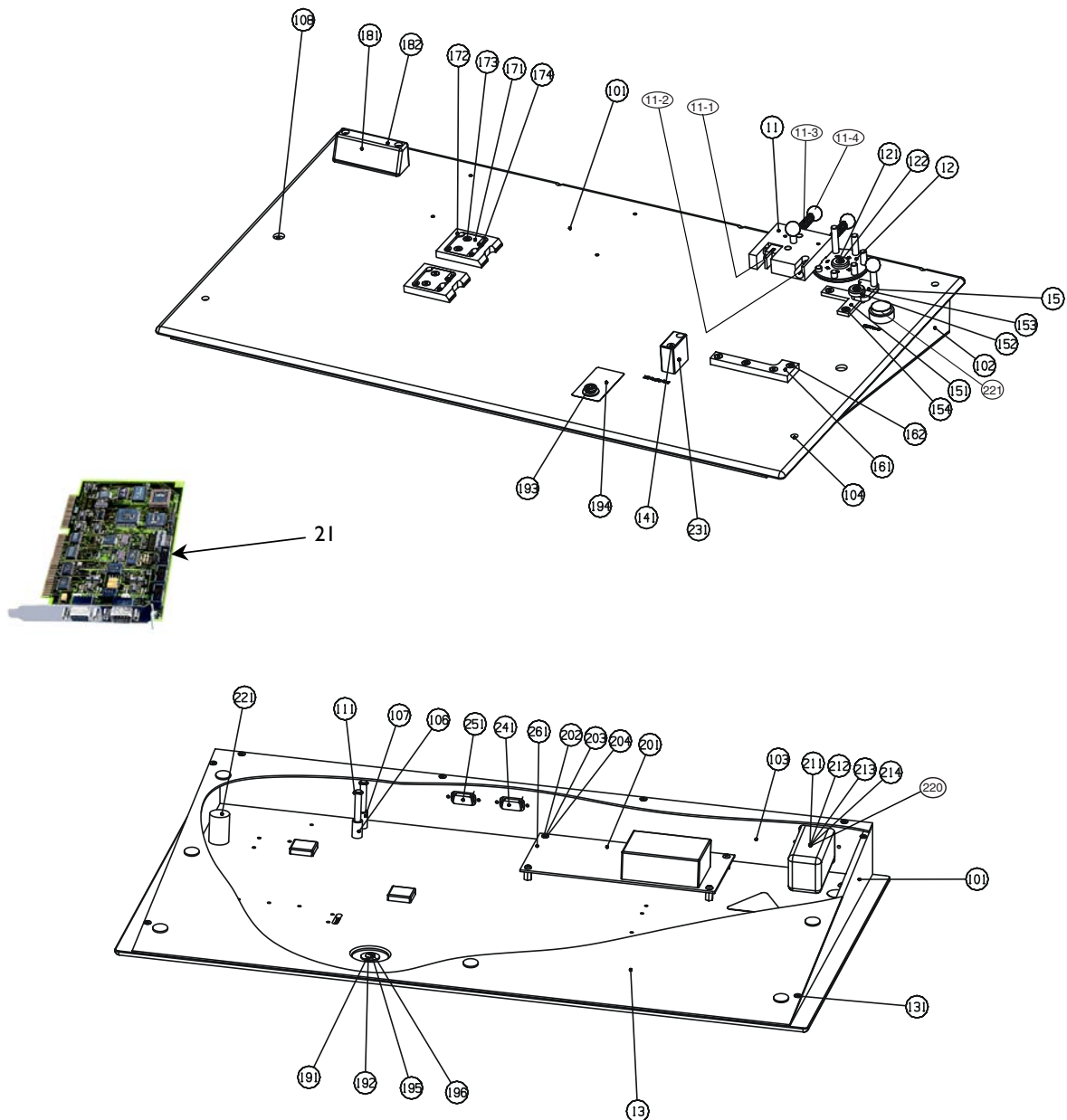


FIGURE 6-1

Layout: ITF2 Repair Tool PA2849/30

Replacement Instructions

Items for which local repair is possible are mentioned in table 6-2.

Item	Description	Section
11	Glass needle block assembly	6.2.4
11-1	Neutral density filter glass	6.2.1
11-2	Needle 1.0mm	6.2.2
11-3	Spring 0.5x6x35mm	6.2.3
11-4	Ball knob 12xM4	6.2.3
21	Interface card iPC-320	6.2.5
111	Retaining ring 3.2	6.2.4
131	Screw M2.5x6, sunken	6.2.4
201	PCB current measurement assembly	6.2.6
220	Fuse, mains (250V T 1A)	6.2.7
221	On/Off cable assembly	6.2.8

TABLE 6-2

Repair Tool Items

6.2.1 Neutral Density Filter Glass

Item	■ 11-1
Frequency	■ Only when damaged or broken
Tools	■ Screwdriver Phillips 2 ■ Soft lint-free, lens cleaning tissue
Precautions	■ None

Instructions:

References as shown in figure 6-1 and 6-2.

- Push the ball knob (11-4) of the filter glass downwards.
- Loosen, a little bit, the 2 plastic screws and remove the damaged or broken filter glass (11-1).
- Replace by a new one and secure with the 2 plastic screws. Use only plastic screws to protect the glass against scratches and damage.



NOTE: Protect yourself against sharp glass edges and rests.

- Check the neutral density filter (glass) on: fingerprints, dirt and dust. Clean with a soft lint free, lens cleaning tissue.

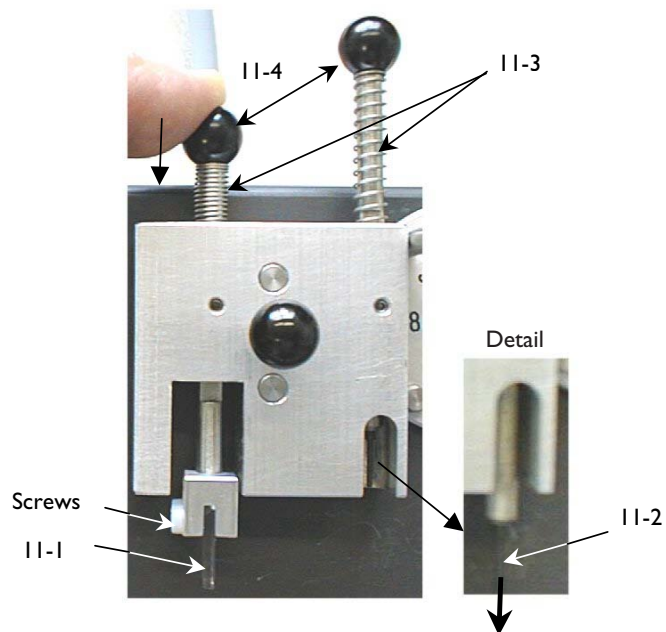


FIGURE 6-2 Replacement Neutral density filter glass

6.2.2 Needle

Item	■ 11-2
Frequency	■ Only when damaged or broken
Tools	■ None
Precautions	■ None

Instructions:

References as shown in figure 6-1 and 6-2.

- Push the needle ball knob (11-4) downwards.
- Pull out the needle (11-2) by hand (see detail).
- Replace by a new one and push upwards.

6.2.3 Spring and Ball Knob

Item	■ 11-3 and 11-4
Frequency	■ Only when damaged or broken
Tools	■ None
Precautions	■ None

Instructions:

References as shown in figure 6-1 and 6-2.

- Loosen and remove the ball knob (11-4) and, if necessary, replace by a new one.
- Remove the spring (11-3) or spring rests and replace by a new one.

6.2.4 Glass Needle Block Assembly

Item	■ 11
Frequency	■ Only when damaged
Tools	<ul style="list-style-type: none"> ■ Allen key s=1.5mm ■ Small pliers ■ Q-tip
Precautions	■ See WARNINGS AND CAUTION as given in section 6.1

Instructions:

References as shown in figure 6-1 and 6-3.

- If necessary, remove first the tool first from an object, refer to section 1.7.2.2.
- Remove the power cord and switch off the Repair Tool, refer to section 1.7.1 or the Quick Start Card 4022 591 91051. If possible let the CAN and RS232 cable in place.
- Lay the repair tool up side down. Make sure not to damage the tool.
- Loosen the 8 Allen screws (131) and remove the bottom cover plate (13).
- Remove the 2 retaining rings (111).
- Replace the assembly by a new one.
- Assemble in reverse order by greasing the two guiding pins first with a thin layer Molykote G-N plus. If necessary remove pollution or old grease first out of the two sliding bearings by using a Q-tip, moistened with isopropanol. Greasing and cleaning are shown in Figure 6-2.

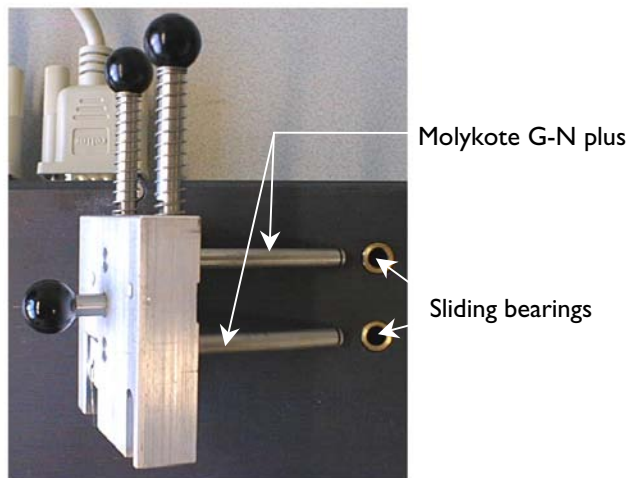


FIGURE 6-3

Cleaning and greasing the guiding



NOTE: Using isoproponal and Molykote G-N plus: source locally and apply local safety regulations.

6.2.5 Interface Card iPC-320

Item	■ 21
Frequency	■ Only when defective
Tools	■ Cross slotted Phillips 01 ■ Screwdriver Phillips 2/3
Precautions	■ See WARNINGS AND CAUTION as given in section 6.1

Instructions:

References as shown in figure 6-1.

- Turn off PC; disconnect the mains and open.
- Build in the CAN-card. Refer to the iPC-320-Manual which is delivered with the CARD. For more informations refer to section 1.7.1 of this manual and the Quick Start Card 4022 591 91051. Close PC and follow the complete installation of the ITF2 repair tool as described in section 1.7.1 and/or the Quick Start Card 4022 591 91051.

6.2.6 PCB Current Measurement Assembly

Item	■ 201
Frequency	■ Only when defective
Tools	■ Allen key s=1.5mm and s=2mm
Precautions	■ See WARNINGS AND CAUTION as given in section 6.1

Instructions:

References as shown in figure 6-1 and 6-4.

- If necessary, remove first the tool first from an object, refer to section 1.7.2.2.
- Remove the power cord and switch off the Repair Tool, refer to section 1.7.1 or the Quick Start Card 4022 591 91051. If possible let the CAN and RS232 cable in place.
- Lay the repair tool up side down. Make sure not to damage the tool.
- Loosen the 8 Allen screws (131) and remove the bottom cover plate (13).
- Disconnect the cables of the On/Off button (221), as one assembly, from the current measurement PCB (201). Pull connector (A) from the PCB.
- Disconnect the cables of the RS232/CAN (241/251) and X12 contactblock (231), as one assembly, from the current measurement PCB. Pull connector (B) from the PCB.

Replacement Instructions

- Disconnect cables of the net entry (211) from the current measurement PCB. Pull the connector (C) from PCB.
- Loosen the 4 Allen screws and remove the PCB.
- Take the PCB out of the housing and replace by a new one.
- Assembly in reserve order.



NOTE: Disconnect the cables only as one assembly (connector) to make sure not to confuse the cable location. For the correct cable location see detail B of Figure 6-4.

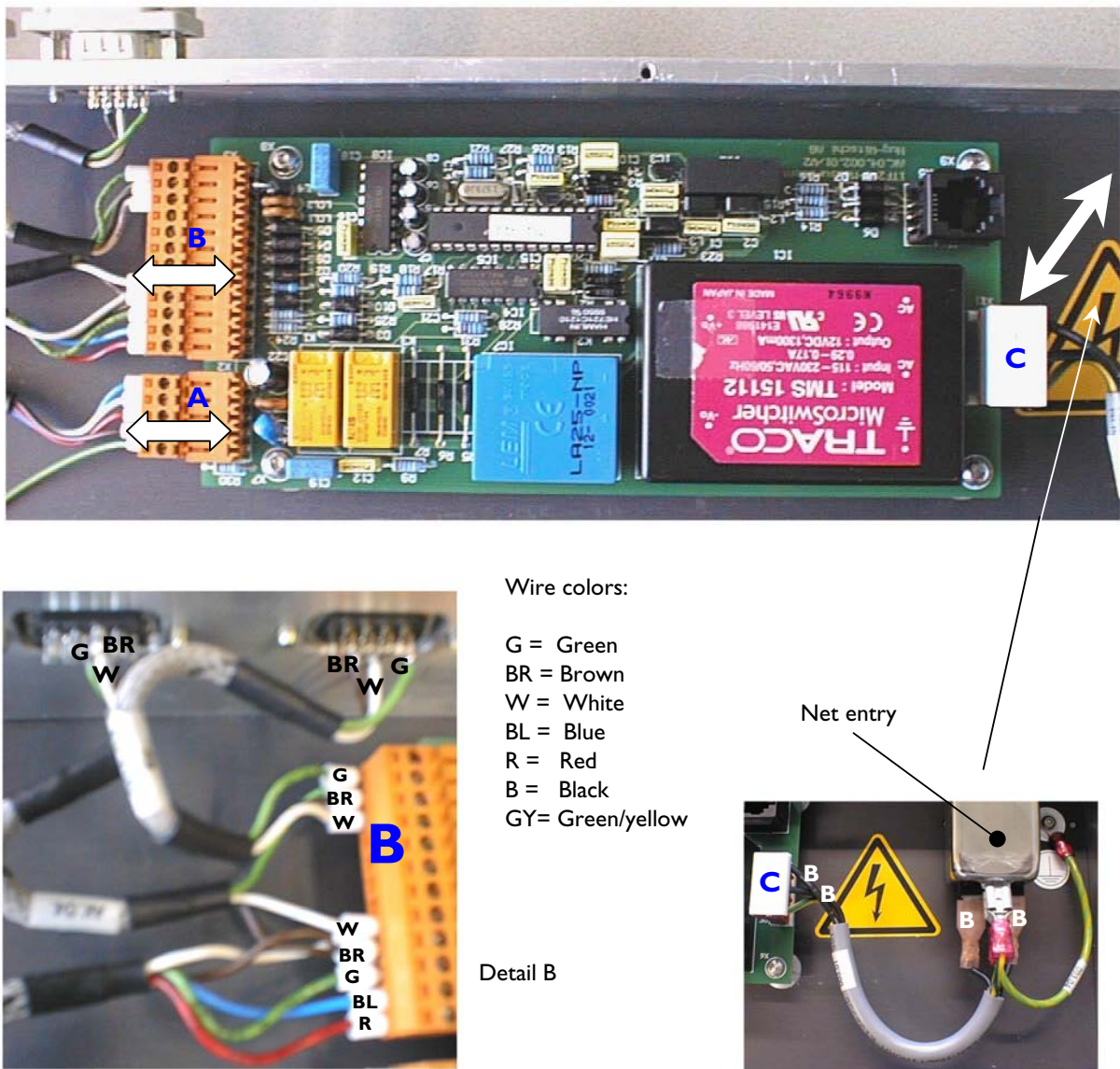


FIGURE 6-4

Replacement: PCB Current Measurement Assembly

6.2.7 Net Filter Fuse

Item	■ 220
Frequency	■ Only when defective
Tools	■ None
Precautions	■ See WARNINGS AND CAUTION as given in section 6.1

Instructions:

References as shown in figure 6-1 and 6-5.

- Remove main cable and switch off the Repair Tool.
- Pull out the fuse holder at the rear side of the Repair Tool (the tool does not need to be opened).
- Replace any of the defective fuses (220) with a new one and place the fuse holder back.
- Disconnect the main cable and switch on the tool.

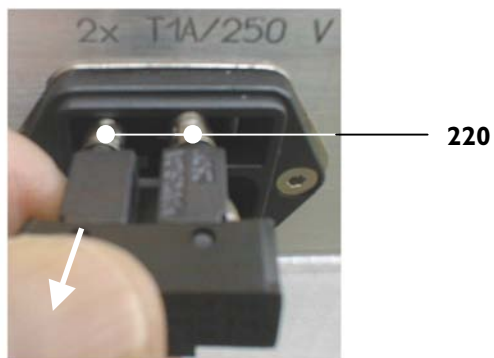


FIGURE 6-5

Replacement: Net filters Fuses (Mains)

6.2.8 On/Off Assembly

Item	■ 221
Frequency	■ Only when defective
Tools	<ul style="list-style-type: none"> ■ Allen key s=1.5mm ■ Screwdriver Phillips 0 ■ Small nippers
Precautions	■ See WARNINGS AND CAUTION as given in section 6.1

Instructions:

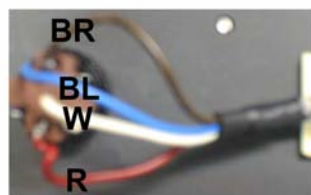
References as shown in figure 6-2 and 6-6.

Replacement Instructions

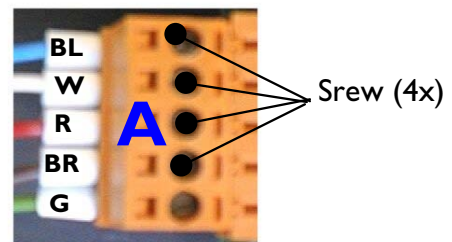
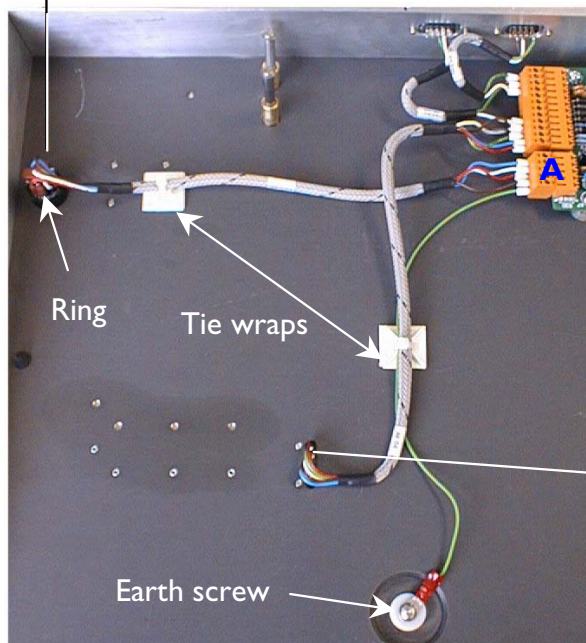
- If necessary, remove first the tool first from an object, refer to section 1.7.2.2.
- Remove the power cord and switch off the Repair Tool, refer to section 1.7.1 or the Quick Start Card 4022 591 91051. If possible let the CAN and RS232 cable in place.
- Lay the repair tool up side down. Make sure not to damage the tool.
- Loosen the 8 Allen screws (131) and remove the bottom cover plate (13).
- Disconnect connector (A), loosen the 5 screws and remove the 5 cables of the On/Off button (221) and earth cable out off connector from the current measurement PCB (201).
- Loosen and remove the switch ring of the power button (221).
- Cut trough the 2 tie wraps and remove the complete on/off assembly trough the hole of the mounting plate.
- Loosen and remove the earth screw.
- Take a new on/off assembly and assemble in reverse order. Make sure to connect the wires onto the correct location, see detail from Figure 6-6.

Wire colors:

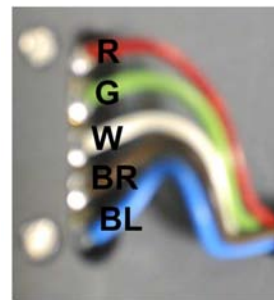
BL = Blue
W = White
R = Red
BR = Brown
G = Green (earth)



Detail Button



Detail A



Detail X12 feeder-port

FIGURE 6-6

Replacement: On/off assembly

CHAPTER 7 Measuring and Adjusting Data

7.1 Spare Parts

Before delivery, all spare parts that require adjustments are adjusted and measured. Therefore, ordered material requires no additional adjustment.

7.2 Adjustments

7.2.1 Adjustment: PA 2849/30 ITF2 Repair Tool

The complete ITF2 Repair Tool calibrates its own current measurement automatically. Each time the software is started, the software will perform an automatic calibration just before the first current measurement.

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CHAPTER 8 Spare Parts List

8.1 Repair

The repair tool is a local repairable unit only. Parts needed for local repair can be ordered and are identified in the spare parts list. Parts, not mentioned in this list, can be obtained on special request.

The lifetime of the repair tool is 150.000 feeder exchanges or 5 years whatever comes first.

8.2 Spare Parts

Before delivery, all spare parts that require adjustments are adjusted and measured, therefore ordered material requires no additional adjustment.

8.3 Spare Parts Lists

The fields in the spare parts list have the following meaning:

Item No.Position Identification.

Part of Item No......Module the part belongs to.

Ordering Code.....the order code at Philips.

t.b.d. = To be defined. Code number not yet available.

DescriptionDescription of the article.

Qty/Mod.....The quantity of the part in one module.

PIIf 'Y', the part must be stocked regionally.

Serv. Instr.If 'Y', a service instruction, maintenance or replacement instruction is available.

Remarks1. Comment or specific information.

2. 'Per Order Article', article with long lead-time.

3. Standard Packing Unit: Minimum packing quantity.

Spare Parts List

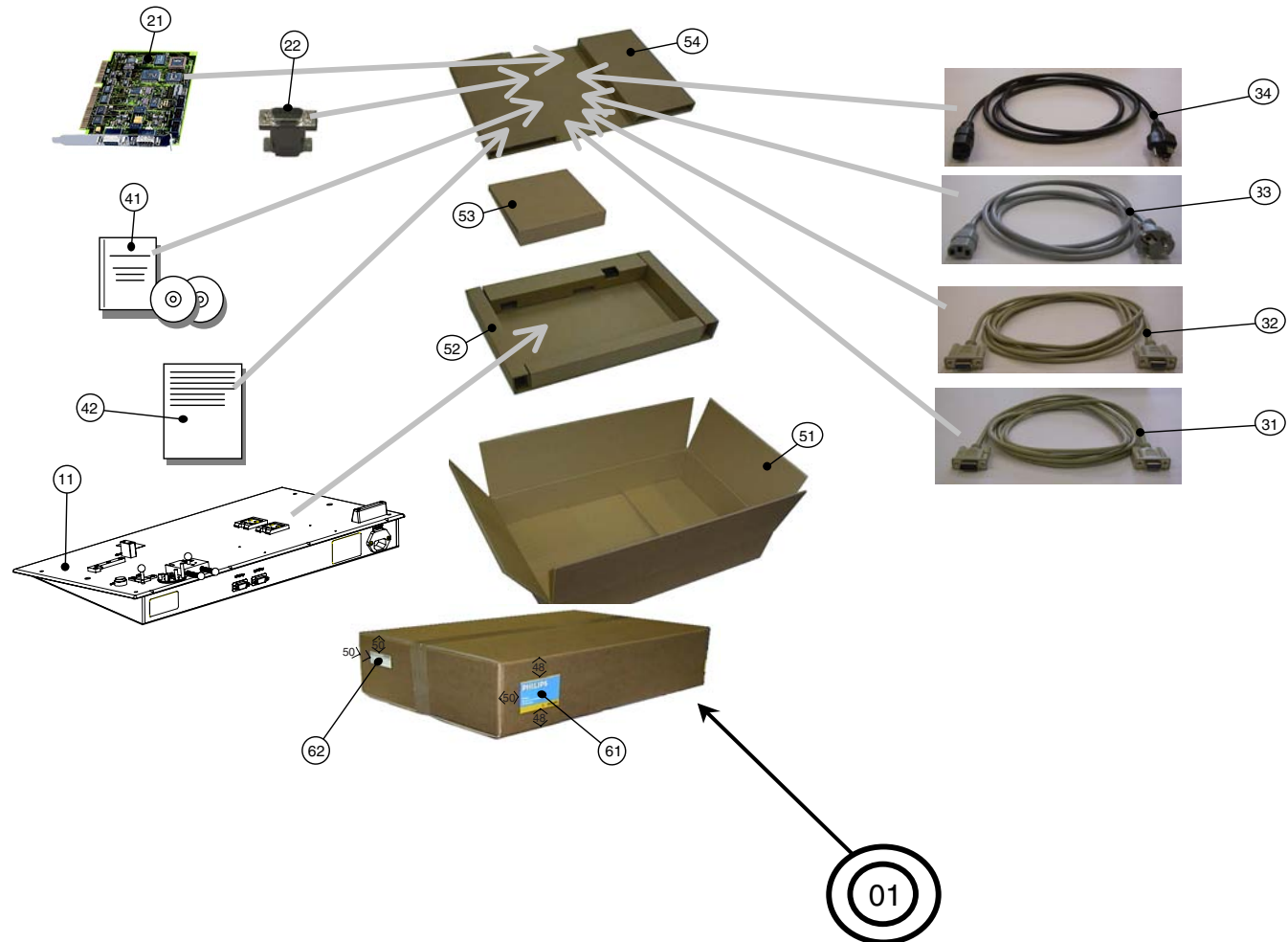


FIGURE 8-I

ITF2 Repair Tool complete

Spare Parts List

Item No.	Part of. Item No.	Ordering Code	Description	Qty/Mod	PI	Repair	Serv. Instr.	Remarks
01	-	9466 028 49301	ITF2 Repair Tool Complete	I			Y	Equivalent to PA2849/30
21	01	9965 000 06715	Interface card iPC-I 320	I			Y	
41	01	9965 000 06714	CD ROM's	I				

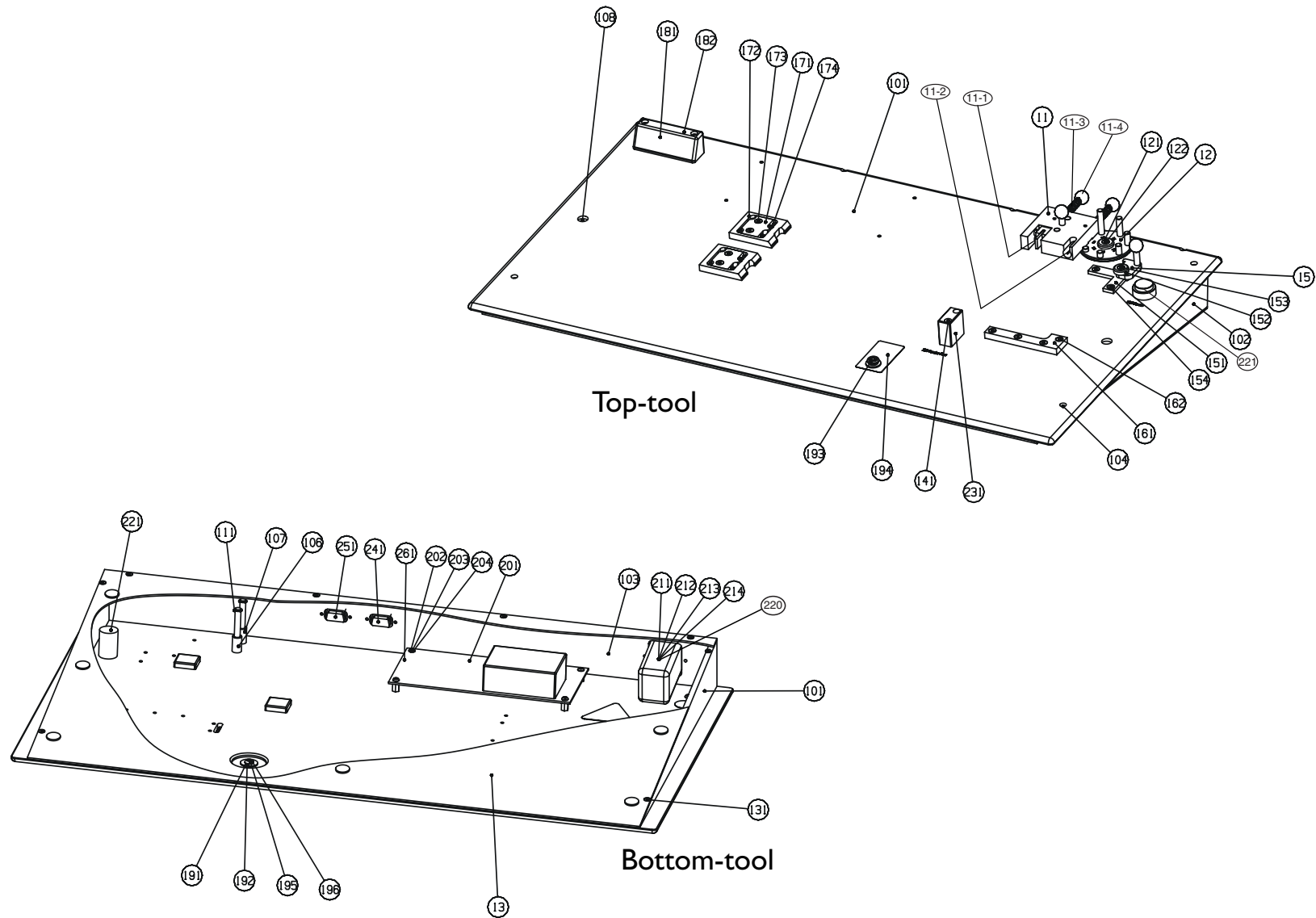


FIGURE 8-2

ITF2 Repair Tool

Spare Parts List

Item No.	Part of. Item No.	Ordering Code	Description	Qty/Mod	PI	Repair	Serv. Instr.	Remarks
11	11	9965 000 06716	Glass-needle-block assembly	1			Y	
11-1	11-11	9965 000 06721	Neutral density filter glass	1			Y	
11-2	11-11	9965 000 06722	Needle 1.0 mm	1			Y	
11-3	11-11	9965 000 06723	Spring 0.5x6x35 mm	2			Y	
11-4	11-11	9965 000 06724	Ball knob 12xM4	2			Y	
111	11	9965 000 06717	Retaining ring 3.2	2			Y	
131	11	9965 000 06718	Screw M2.5x6, sunken	8			Y	
201	11	9965 000 06719	PCB current measurement assembly	1			Y	
220	11	4822 070 31002	Fuse, mains (250V T 1A)	2			Y	
221	11	9965 000 06720	On/Off cable assembly	1			Y	

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CHAPTER 9 Drawings and Diagrams

9.1 Diagrams

9.1.1 Repair Tool (electrical diagram)

Figure 9-1 shows the electrical diagram of the ITF2 Repair Tool.

Electrical diagrams

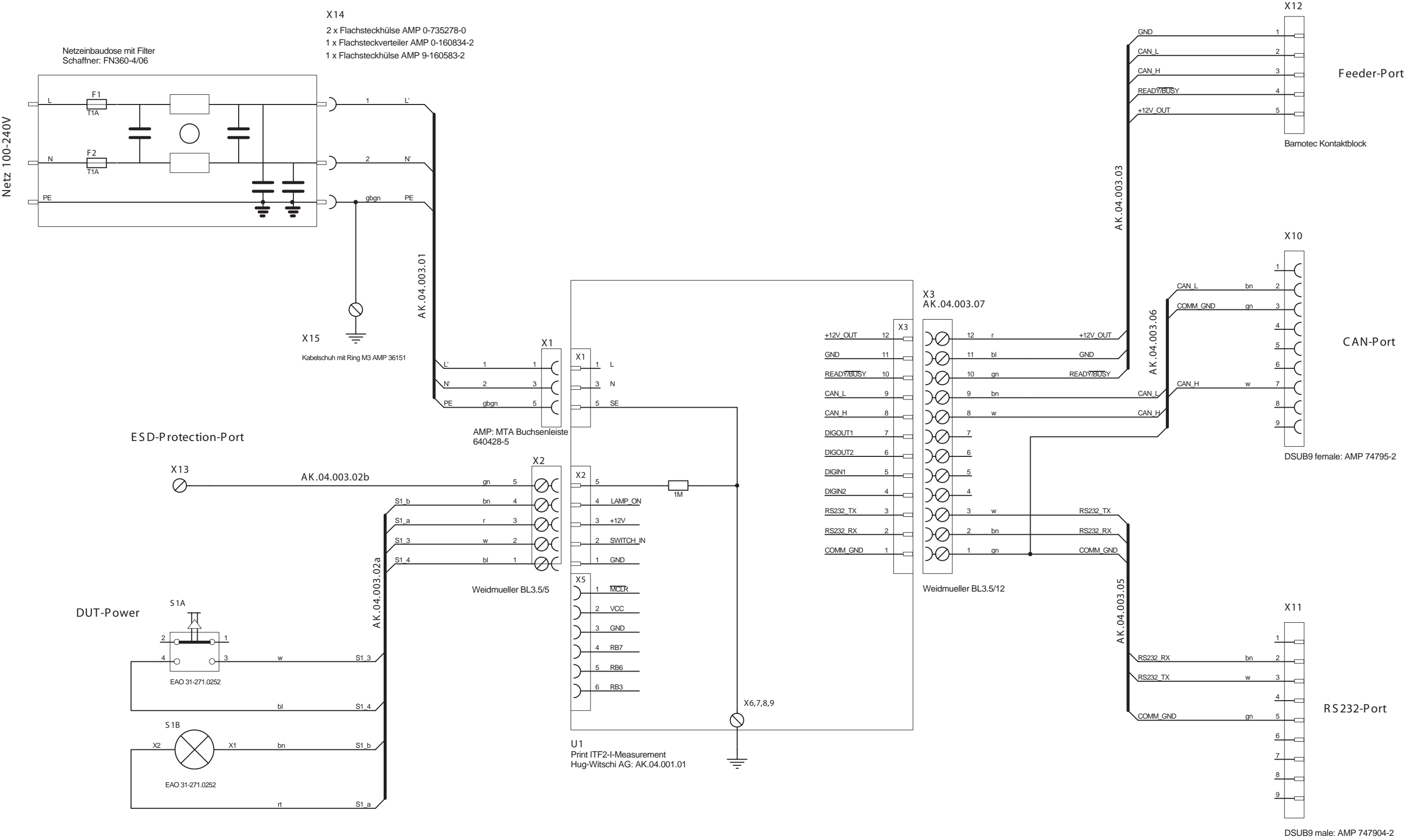


FIGURE 9-I ITF2 Repair Tool, electrical diagram

9.1.2 Current Measurement PCB

Figure 9-2 shows the electrical diagram of the current measurement PCB.

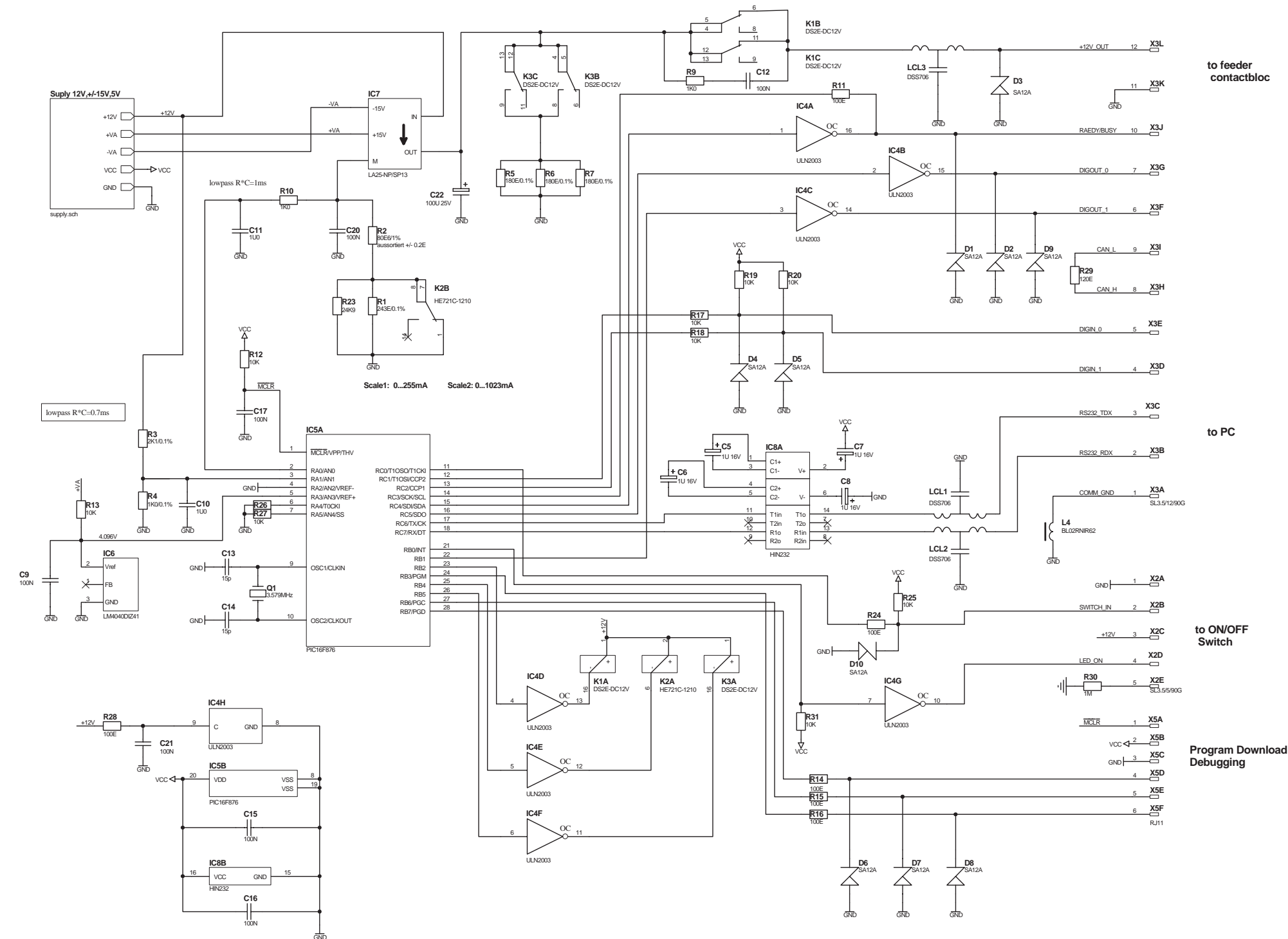


FIGURE 9-2

Current Measurement PCB, diagram

9.1.2.1 Current Measurement PCB (detail)

Figure 9-3 shows detail 1 of the electrical diagram of the current measurement PCB.

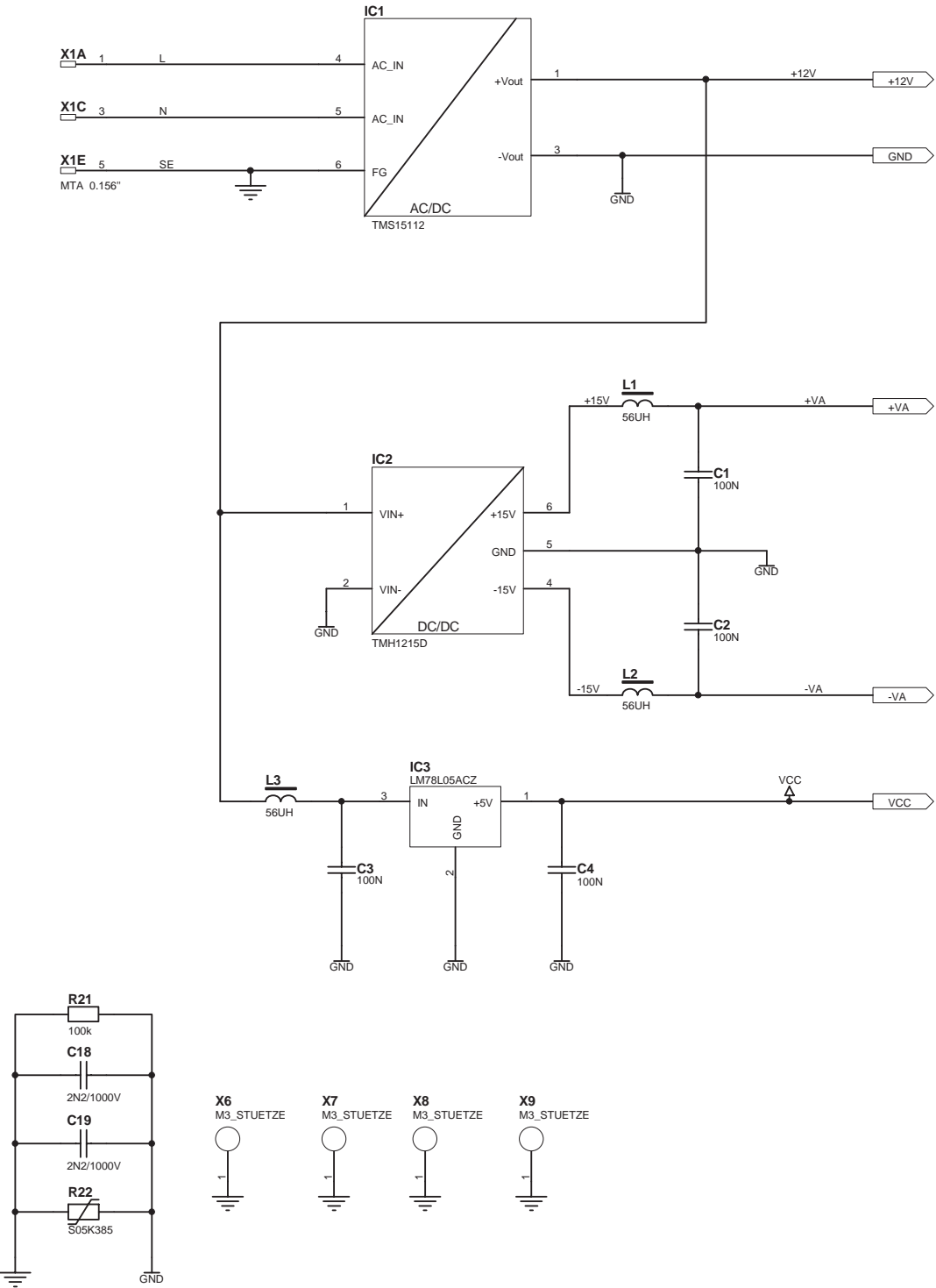


FIGURE 9-3 Current Measurement PCB, diagram (detail)



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